On the anisotropy of the elastic ... S/126/61/012/002/018/019
E032/E514

the anisotropy may also be due to the fact that the thermal expansion coefficient is not the same in all directions. However, according to A. M. Belikov (Ref.10: Dissertation, MIS, 1958) the expansion coefficient along the a and c axes is in fact practically the same (3.84×10^{-6} and 3.90×10^{-6}). There are 1 table and 10 references: 7 Soviet and 3 non-Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut tverdykh splavov (All Union Scientific Research Institute for Hard Alloys)

SUBMITTED: March 11, 1961

Card 3/3

ACCESSION NR: AP4015266 S/0226/64/000/001/0056/0064

AUTHORS: Ivensen, V. A.; Eyduk, O. N.

TITLE: The structure of two-phase solid cermet alloys

SOURCE: Poroshkovaya metallurgiya, no. 1, 1964, 56-64

TOPIC TAGS: WC Co alloy, carbide phase structure, cobalt phase structure, binary cermet alloy, cermet, Co phase microscopic analysis, WC phase microscopic analysis

ABSTRACT: A discussion concerning the structure of WC-Co alloys is presented. It starts with a short review of the opinions expressed by other authors and a criticism of their conclusions. According to previous investigations, the analyses made with electron microscope showed that the carbide phase appeared to be continuous while the cobalt phase was concentrated in the inclusions, seemingly isolated from each other. However, this isolation was observed only in the polished sections. On the other hand, the fact that cobalt was removed from the alloy by the action of hydrochloric acid pointed to the existence of connections between the isolated cobalt areas. The authors believe that the degree of carbide grain coalescence depends on the differences in the technical process involved, and they claim that the cobalt "interlayers" between the carbide grains

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ACCESSION NR: AP4015266

affect the physical nature of the material. It is concluded that the degree of carbide grain coalescence should be regarded as a very important structural characteristic of the alloy studied and that it should be accounted for (together with such other structural characteristics as the grain size, etc) in determining the physical properties of the WC-Co alloy. Orig. art. has: 7 photographs.

ASSOCIATION: Vsesoyuzny*y nauchno-issledovatel'skiy institut tverdy*kh splavov, Moscow (All-Union Scientific Research Institute of Hard Alloys)

SUBMITTED: 13Feb64 DATE ACQ: 12Mar64 ENCL: 00

SUB CODE: ML NO REF SOV: 009 OTHER: 008

Card 2/2

ACCESSION NR: AP4044910 S/0226/64/000/004/0043/0057

AUTHOR: Ivensen, V.A., Eyduk, O.N., Pivovarov, L.Kh.

TITLE: Some regularities in the deformation of sintered hard alloys of WC-Co

SOURCE: Poroshkovaya metallurgiya, no. 4, 1964, 43-57

TOPIC TAGS: sintered alloy, powder alloy, tungsten carbide, hard alloy, cobalt alloy, tungsten carbide alloy, alloy deformation, plastic deformation, alloy structure, yield point

ABSTRACT: It has recently been established that there is no direct relationship between the bending strength of a hard alloy and its notch toughness, and this fact has attracted interest to phenomena connected with the deformation of hard alloys. However, the relative deformations of the cobalt and the carbide phases and their separate roles in the total deformation process have not yet been clarified. In order to fill this gap, the present authors investigated the hard alloy WC-Co with respect to plastic deformation and its dependence on the composition (6-50% Co) and structure (fine grain and coarse grain). Prismatic test specimens (10x10x20 mm) of the hard alloy were deformed under the influence of gradually increasing uniaxial compressive loads. The residual

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ACCESSION NR: AP4044910

deformation was measured by an optimeter and the yield point was determined from logarithmic stress-strain curves, corresponding to a permanent strain of 0.1%. The lateral faces of the specimens were ground and polished before the tests, and some of the specimens were subjected to X-ray investigations before and after deformation. Such specimens were annealed at 800C before deformation to remove the strain-hardening effect produced by the grinding. The width of the radiospectrographic lines was measured by the ionization method. Grain size and angle of disorientation were computed from the number and size of the reflexes obtained photographically. These studies revealed plastic deformation of the tungsten carbide grains, as indicated by numerous bands of slippage appearing on the surface of the grains after deformation, as well as by an increase in the number of reflexes on the X-ray picture. The yield point of the hard alloy was found to be directly proportional to the relative value of the contact surface of the tungsten carbide grains. The resistance to deformation of the alloy in the initial stages is determined mainly by the resistance to deformation of the carbide skeleton. It is only after further deformation that the resistance to deformation of the strain-hardened cobalt phase is manifested. The mechanism of deformation of the carbide skeleton of the alloy does not differ in principle from that of a polycrystalline

ACCESSION NR: AP4044910

metal. Orig. art. has: 4 graphs, 15 photomicrographs and 6 tables.

ASSOCIATION: Vsesoyuzny*y nauchno-issledovatel'skiy institut tverdy*kh splavov (All-Union Scientific Research Institute of Hard Alloys)

SUBMITTED: 15Aug63 ENCL: 00 SUB CODE: MM

NO REF SOV: 003 OTHER: 006

3/3
Card

L 20667-66 EWT(d)/EWT(m)/EWP(w)/T/EWP(t)/EWP(k) IJP(c) JD/HW/EM

ACC NR: AP6001477 SOURCE CODE: UR/0226/65/000/012/0069/0072

AUTHOR: Ivensen, V. A.; Gol'dberg, Z. A.; Eyduk, O. N.; Fal'kovskiy, V. A.

ORG: All-Union Scientific Research Institute of Hard Alloys (Vsesoyuznyy nauchno-issledovatel'skiy institut tverdykh splavov)

TITLE: Resistance of a hard alloy to failure under impact loads

SOURCE: Poroshkovaya metallurgiya, no. 12, 1965, 69-72

TOPIC TAGS: plastic deformation, mechanical shock resistance, specific resistance, compressive strength, ultimate stress, bending stress, data analysis, tungsten containing alloy, failure

ABSTRACT: The effect of plastic deformation of a hard alloy on its resistance to failure under impact loads was analyzed. It was shown that despite the relatively low value of plastic deformation, the latter has a great effect on the efficiency of the hard-alloy load. This was corroborated by experimental data characterizing the efficiency of a very coarse-grained and a medium-grained alloy with 20% Co. The resistance to failure and efficiency of the coarse-grained alloy is much greater than that of the medium-grained alloy despite the higher ultimate bending and compression strengths of the latter. The differ-

Card 1/2

L 20667-66
ACC NR: AP6001477 O

ence in tool efficiency is explained by the greater deformability of the coarse-grained alloy. Orig. art. has: 1 table. [Based on author's abstract] [NT]

SUB CODE: 11, 20/ SUBM DATE: 13Feb65/ ORIG REF: 003/ OTH REF: 001

Card 2/2 BK

ABELEV, Yu.M.; BRAYT, P.I.; KRUTOV, V.I.; KULACHENOK, B.G.; SOROCHAN, Ye.A.; EYDUK, R.P.

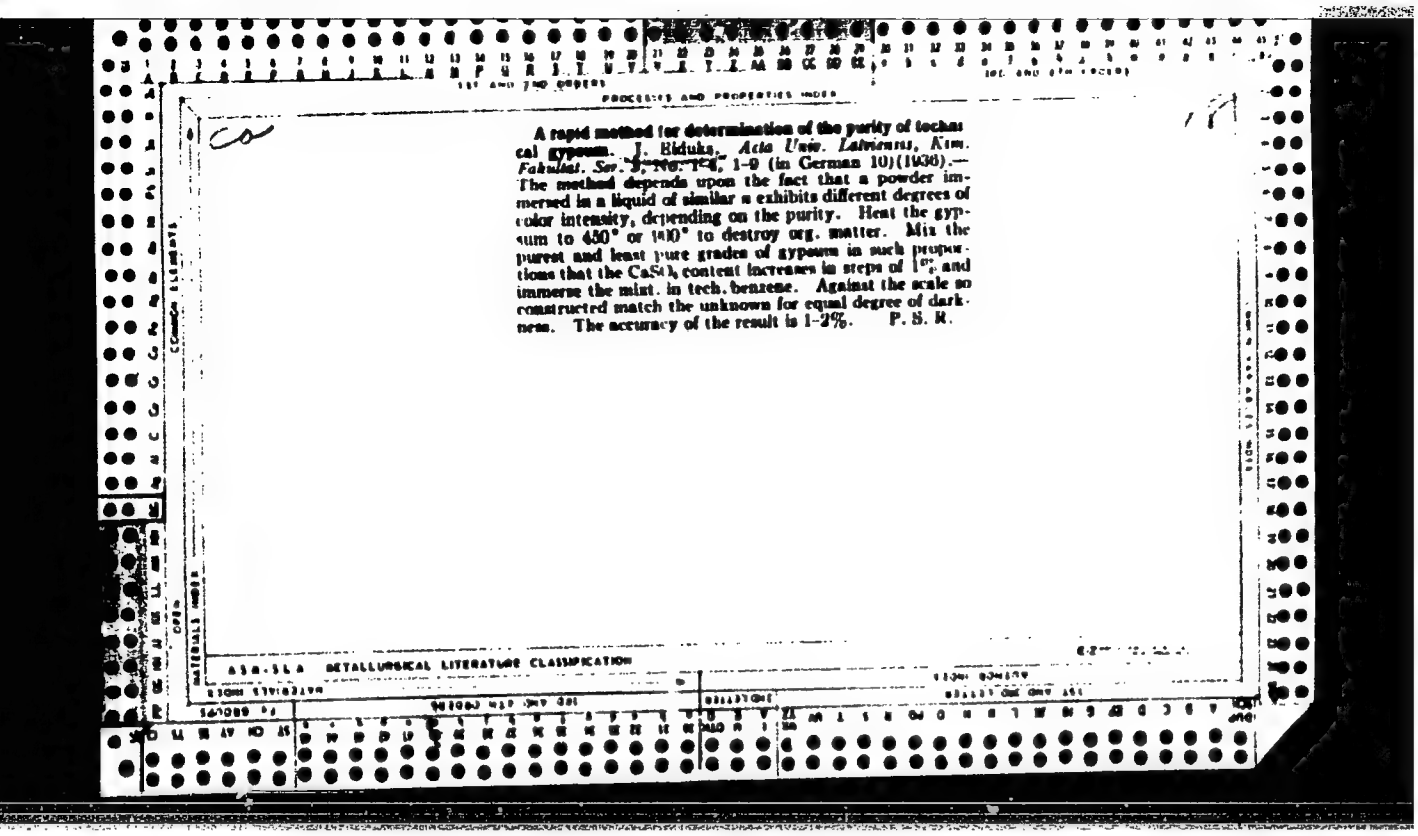
Testing a series 1-480-P large-panel apartment house erected on settling soil. Osn., fund.i mekh.grun. 4 no.2:3-5 '62. (MIRA 15:8)

(Zaporozh'ye--Apartment houses--Testing)

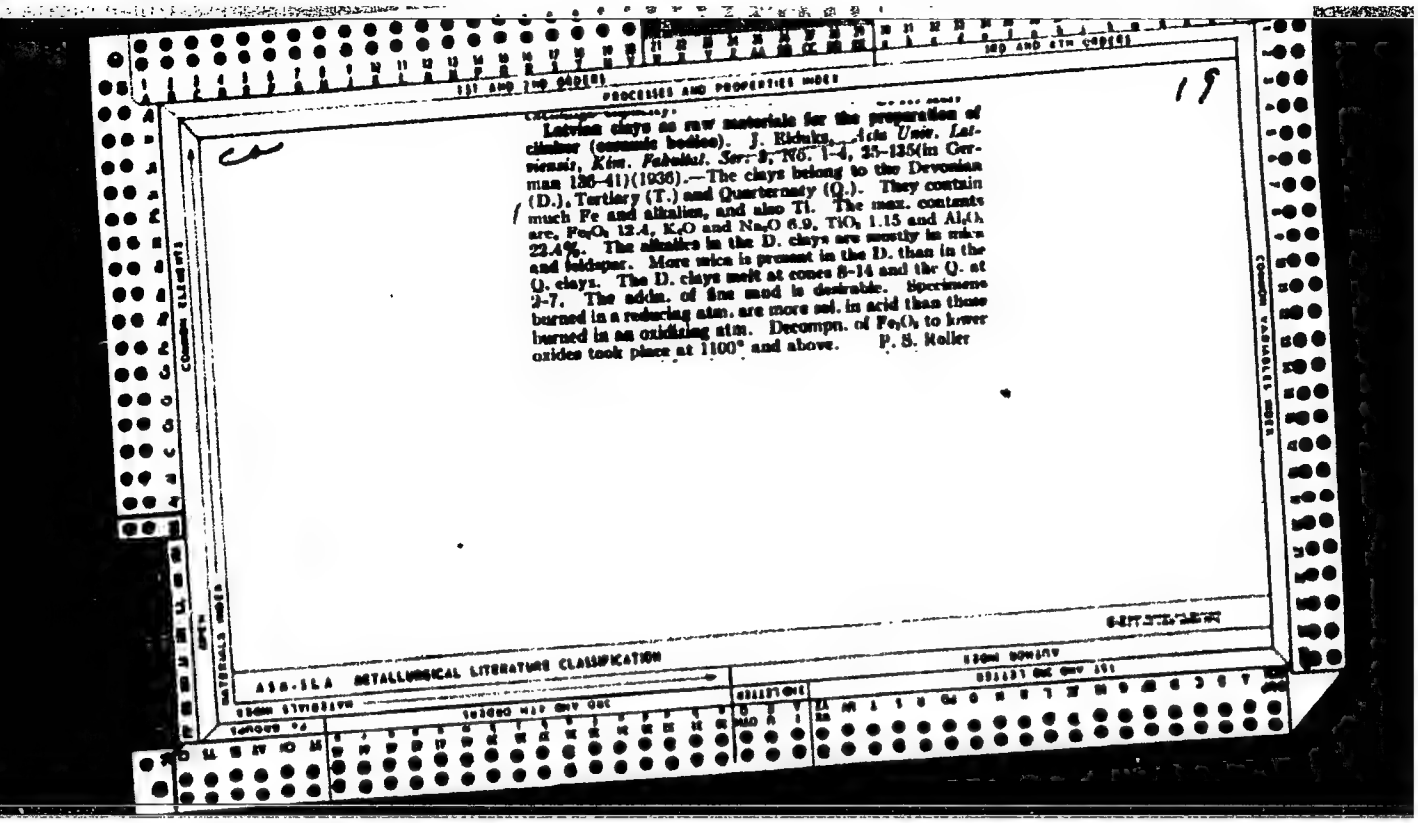
ABELEV, Yuriy Mordukhovich, doktor tekhn. nauk; KRUTOV, Vladimir Ivanovich, kand. tekhn. nauk; EYDUK, Rudol'f Petrovich, st. nauchn. sotr., inzh.; POLUBNEVA, V.I., inzh., nauchn.red.

[Preparation of foundation beds and the laying of foundations of large-panel apartment houses on sagging soil; practices of the Research Institute for Foundation Beds and Underground Structures of the State Committee on Construction of the Council of Ministers of the U.S.S.R. and of the Zaporozh'ye Housing Construction Trust, and the Nikopol' Construction Foundations Trust] Podgotovka osnovanii i ustroistvo fundamentov krupnopanel'nykh zhilykh domov na prosadochnykh gruntakh; iz opyta NII osnovanii i podzemnykh sooruzhenii Gosstroia SSSR, trestov "Zaporozhzhilstroi" i "Nikopol'stroi." Moskva, Stroizdat, 1965. 19 p. (MIRA 18:9)

1. Rukovoditel' laboratorii stroitel'stva na prosadochnykh gruntakh Nauchno-issledovatel'skogo instituta osnovaniy i podzemnykh sooruzheniy (for Abelev). 2. Laboratoriya stroitel'stva na posadochnykh gruntakh Nauchno-issledovatel'skogo instituta osnovaniy i podzemnykh sooruzheniy, Moskva (for Krutov, Eyduk).



A rapid method for determination of the purity of technical gypsum. J. Ridiuks. *Acta Univ. Latviensis, Kim. Fakultat. Ser.* 3, No. 1-4, 1-9 (in German 10)(1936).—The method depends upon the fact that a powder immersed in a liquid of similar n exhibits different degrees of color intensity, depending on the purity. Heat the gypsum to 450° or 900° to destroy org. matter. Mix the purest and least pure grades of gypsum in such proportions that the $CaSO_4$ content increases in steps of 1%, and immerse the mixt. in tech. benzene. Against the scale so constructed match the unknown for equal degree of darkness. The accuracy of the result is 1-2%. P. S. R.



Latvian clays as raw materials for the preparation of clinker (ceramic bodies). J. Riekuls. *Acta Univ. Latviensis, Kim. Fakultat. Ser.* 3, No. 1-4, 25-135(in German 126-41)(1936).—The clays belong to the Devonian (D.), Tertiary (T.) and Quarternary (Q.). They contain much Fe and alkalies, and also Ti. The max. contents are, Fe_2O_3 12.4, K_2O and Na_2O 6.9, TiO_2 1.15 and Al_2O_3 22.4%. The alkalies in the D. clays are mostly in mica and feldspar. More mica is present in the D. than in the Q. clays. The D. clays melt at cones 8-14 and the Q. at 3-7. The addn. of fine mud is desirable. Specimens burned in a reducing atm. are more sol. in acid than those burned in an oxidizing atm. Decompn. of Fe_2O_3 to lower oxides took place at 1100° and above. P. S. Roller

L 32244-65 EWT(d)/EWP(e)/EWT(m)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EWP(b)/
EWP(l) Pf-4 IJP(c) JD/JG
ACCESSION NR: AR5004771 S/0137/64/000/010/G036/G036

SOURCE: Ref. zh. Metallurgiya, Abs. 10G245

AUTHOR: Vodop'yanova, L. S.; Marychev, V. V.; Eyduk, Yu. A.

TITLE: Study of high temperature sintering of tungsten

CITED SOURCE: Sb. tr. Vses. n.-i. in-t tverdykh splavov, no. 5, 1964, 221-224

TOPIC TAGS: tungsten, powder metallurgy, powder metal pressing, sintering, temperature dependence, impurity content, vacuum refining

TRANSLATION: Tungsten powder prepared by reduction of WO_3 was pressed on a hydraulic press under a pressure of 2 tons/cm^2. The resulting molded pieces, which had a low density, were first sintered in a hydrogen atmosphere at 750-800° (1-1.5 hrs). Final sintering of the molded pieces was done in a TsEP-302 vacuum welding machine under a vacuum of 10-3 mm Hg and a rate of temperature increase of 50°/min. The molded pieces began to sinter at 1300-1500°. The rate of sintering increased sharply when the temperature was

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ACCESSION NR: AR5004771

raised to 2400°. Further temperature increase was not accompanied by any significant increase in the density of the molded pieces. Silicon impurities (in the form of elemental silicon) and copper impurities were eliminated at 1300°, calcium, chromium, iron, and nickel impurities at 1600-1800°, and aluminum impurities at 2000-2200°. Oxygen was intensively eliminated at temperatures above 2200°. The oxygen content in tungsten sintered at 2200° did not exceed 0.005%. V. Neshpor.

SUB CODE: MM ENCL: 00

Card 2/2

EYDUK, Yu.Ya.

EYDUK, Yu Ya. -- "Characteristics of Clays of the Latvian SSR and Their Suitability for Making Clinker Shapes." Latvian State U, 1949. In Latvian (Dissertation for the Degree of Candidate of Chemical Sciences)

SO: Izvestiya Ak. Nauk Latvivskoy SSR, No. 9, Sept., 1955

IYEVIN'SH, A.F.[Ievinš, A.], glav. red.; EYDUK, Yu.Ya.[Kiduks,J.], zam. glav. red.; VAYVAD, A.Ya.[Vaivads,A.], red.; KUKURS, O.K., red.; MAKSIMOVA, O.S., red.; UPITE, A.Yu., red.; DYMARSKAYA, O., red.

[Glazes, their production and application] Glazuri, ikh proizvodstvo i primenenie. Riga, Izd-vo AN Latviiskoi SSR, 1964. 249 p. (MIRA 18:4)

1. Latvijas Padomju Socialistiskas Republikas Zinatnu Akademija. Kimijas instituts.

EYDUKS, Ya.

EIDUKS, J.; HOFMANIS, B.

Method for rapid determination of hydrate water in gypsum which contains dolomite. Latvijas PSR Zinatnu Akad. Vestis '49, No.7, 85-90. (MLRA 4:1) (CA 48 no.1:341 '54)

EIDUKS, Yu.

Brit Abs Bl
June 1953

Building and road-making materials

(5)
Inst

Use of gypsum quarry wastes as a source of bonding agents. Yu. Eiduks, A. Vaivads, A. Apinis, and B. Hofman (*Kim. Inst. Zinatnisko Rakstu, Riga*, 1950, 1, 5—33).—The wastes contain 46—65% of $CaSO_4,2H_2O$, 15—33% of dolomite, and 12—20% of clay; when heated to 170° they yield a second-grade plaster of Paris, and a product resembling anhydrite cement is obtained with optimum mechanical properties by calcination at 750—850° with 1% of $NaHSO_4$+5% of CaO+15% of open-hearth slag: it contains $CaSO_4$ with small quantities of CaO,Al_2O_3+$2CaO,SiO_2$.

EYDUKS, YU.

(3)

Brit Abst. BI
June 1953
Building and
Road MAKING
Materials

Possibility of extending the range of Portland cements in the Latvian SSR. K. Karlson, Yu. Eidiņš, and A. Vaivads (*Kim. Inst. Zinatniskie Raksti, Riga*, 1950, 1, 171—188).—The conditions are established for obtaining high-grade Portland cement by firing at 1485° a mixture of clay from the Brotsensk district with lime, the coeff. of saturation of SiO_2 by CaO in the clinker being 0·94. In an attempt to find suitable pozzuolanic Portland cement mixtures, it is established that the most suitable "hydraulic" addition is clay from the Kengarag district, fired at 900°, since the cement produced with it is salt-resistant and stronger after storage in water for 180 days than plain Portland cement. The suitability of a fired clay for this purpose can be assessed from an analysis of the H_2O extract from it: <5% of the Al_2O_3 in the clay should be present.

R. C. MURRAY.

EIDUKS, J.

Chemical Abstracts
Vol. 48 No. 5
Mar. 10, 1954
Cement, Concrete, and Other
Building Materials

Suitability of local (Latvian) dolomite and lime marls for the production of Roman cement. J. Eiduks, A. Valvads, and A. Mjagkova (Acad. Sci. Latv., S.S.R., Riga). *Latvijas PSR Zinātņu Akad. Vēstis* 1950, No. 12 (Whole No. 41), 147-60(Russian summary, 161-2).—The Riga district dolomite marls investigated had the following hydraulic moduli and $CaCO_3/MgCO_3$ ratios, resp.: marl I, 1.89, 1/0.967; II, 1.55-2.54, 1/0.947-0.695; III, 1.93-2.37, 1/0.951-0.930. The lime marl (IV) had modulus 1.73-2.23 and contained 72.2-76.2% $CaCO_3$. From I, II, and III, satisfactory Roman cements were obtained by baking at 800-850°. Addn. of 1-5% gypsum increased the strength by 10-50% but influenced the hardening time only slightly. IV gave Roman cement upon baking above 1100°. Generally, good cement could be obtained from dolomite marls if they contained over 10% of homogeneously dispersed clay and were baked until the product was left with 4-8% CO_2 content; e.g., heating for 6 hrs. at 750-850° gave best results with piece size 20 × 40 mm. Lime marls were suitable if they contained more than 20%, preferably 25-35%, clay. The mechanism of hardening is discussed on the basis of thermal analysis curves of the products. A. D.

(4)

EIDUKS, J.

Chemical Abstracts
May 25, 1954
Glass, Clay Products

(3) 3

Lead- and boron-free glazes. J. Eiduks and H. Godes. *Latvijas PSR Zinatnu Akad. Vestis* 1950, No. 12 (Whole No. 41), 163-70(in Russian; Latvian summary, 170).—Studies were made of the effects of alkali, CaO and MgO, ZnO and BaO, Fe_2O_3, F, B_2O_3, Al_2O_3 and SiO_2 on glazes fired at 900-1000°. The glazes listed below were prepd. and tested; they are suggested for further study. 0.4 K_2O + Na_2O, 0.15-0.2 CaO + MgO, 0.4-0.45 BaO + ZnO, 0.05-0.07 Al_2O_3, 0.05-0.07 Fe_2O_3, 1.8 SiO_2. This glaze is clear and has good lustre. Thin layer gives little noticeable craze. The glaze 0.2-0.25 Na_2O, 0-0.1 K_2O, 0.15-0.2 CaO + MgO, 0.5-0.6 BaO + ZnO, 0.15-0.2 Al_2O_3, 0.15 Fe_2O_3, 3.0-3.2 SiO_2, 0.4-0.5 B_2O_3 has the same characteristics as the previous glaze and also withstands a 120° temp. difference. In the absence of BaO and ZnO, the following glaze is suggested: 0.6-0.7 K_2O + Na_2O, 0.3-0.4 CaO + MgO, 0.1 Al_2O_3, 0.5-0.6 Fe_2O_3, 1.8 SiO_2, 0.4-0.5 B_2O_3. The following glaze will withstand a 100° temp. difference: 0.4 Na_2O + K_2O, 0.15-0.25 CaO + MgO, 0.35-0.45 BaO + ZnO, 0.05-0.07 Al_2O_3, 0.15-0.2 Fe_2O_3, 2.0-2.5 SiO_2, 0.1-0.2 SiF_4. B. Z. Kamich

1. EIDUKS, J.: VAIVADS, A.: PILSKALNE, A.

2. USSR (600)

4. Latvia - Clay

7. Adsorption properties of various clays of the Latvian S.S.R.
Latv. PSR Zin. Akad. Vestis 2, 1951.

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

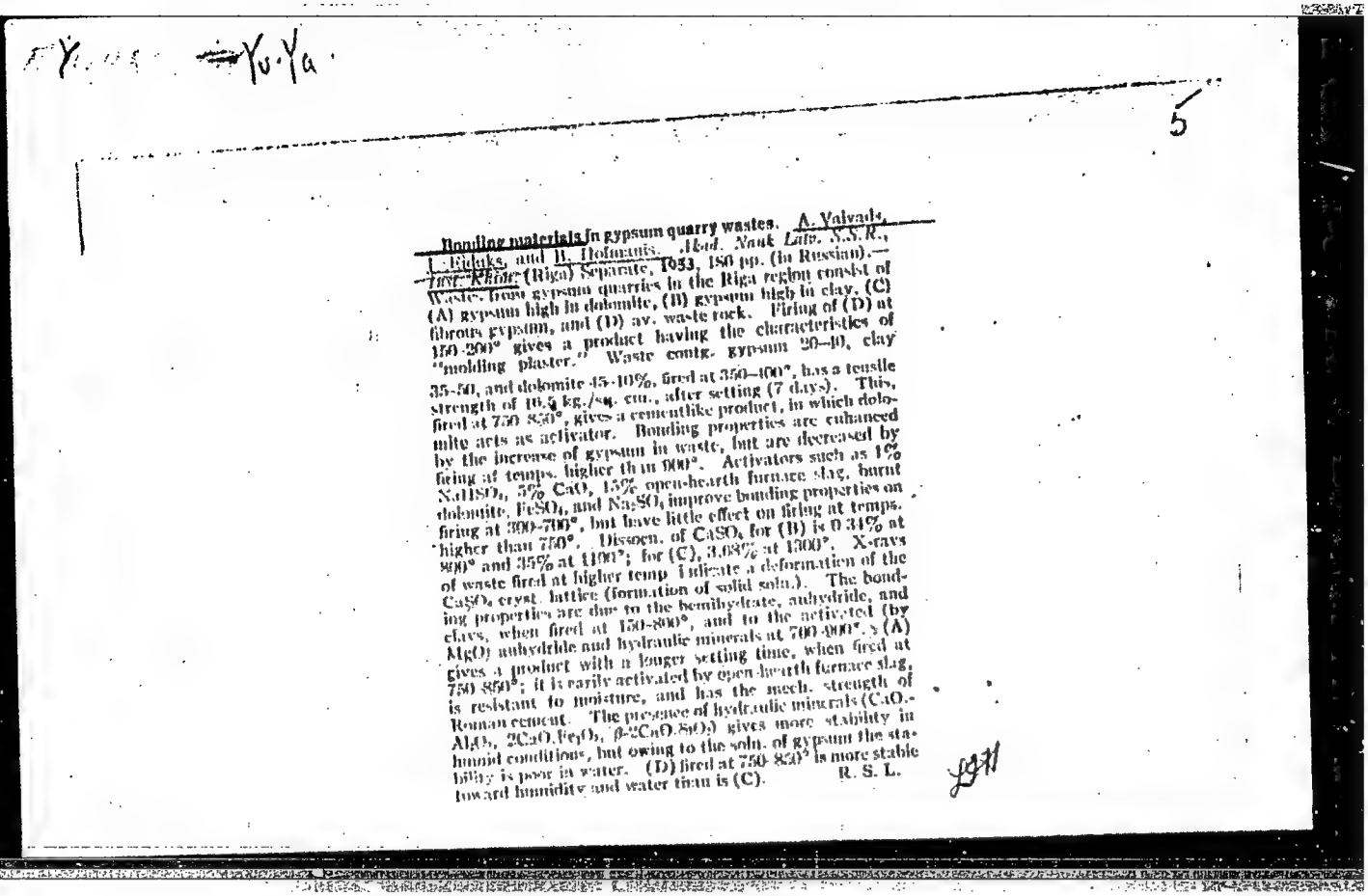
1. EYDUKS, J.; VAYVADS, A.; CIRULIS, Fr.

2. USSR 600

4. Paper Industry

7. Fillers for paper from local raw materials, Latv. PSR Zin. Akad. Vestis, No. 9, 1951.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.



Yu. Ya.

5

Bonding materials in gypsum quarry wastes. A. Valvads, I. Fidulis, and B. Holmanis. *Akad. Nauk Latv. S.S.R., Inst. Khim.* (Riga) Separate, 1953, 180 pp. (in Russian).—Wastes from gypsum quarries in the Riga region consist of (A) gypsum high in dolomite, (B) gypsum high in clay, (C) fibrous gypsum, and (D) av. waste rock. Firing of (D) at 150-200° gives a product having the characteristics of "molding plaster." Waste contg. gypsum 20–40, clay 35-50, and dolomite 45-10%, fired at 350–400°, has a tensile strength of 10.5 kg./sq. cm., after setting (7 days). This, fired at 750-850°, gives a cementlike product, in which dolomite acts as activator. Bonding properties are enhanced by the increase of gypsum in waste, but are decreased by firing at temps. higher than 900°. Activators such as 1% $NaHSO_4$, 5% CaO, 15% open-hearth furnace slag, burnt dolomite, $FeSO_4$, and Na_2SO_4 improve bonding properties on firing at 300-700°, but have little effect on firing at temps. higher than 750°. Dissocn. of $CaSO_4$ for (B) is 0.34% at 900° and 35% at 1100°; for (C), 3.68% at 1300°. X-rays of waste fired at higher temp. indicate a deformation of the $CaSO_4$ cryst. lattice (formation of solid soln.). The bonding properties are due to the semihydrate, anhydride, and clays, when fired at 150-800°, and to the activated (by MgO) anhydride and hydraulic minerals at 700-900°. (A) gives a product with a longer setting time, when fired at 750-850°; it is easily activated by open-hearth furnace slag, is resistant to moisture, and has the mech. strength of Roman cement. The presence of hydraulic minerals ($CaO \cdot Al_2O_3$, $2CaO \cdot Fe_2O_3$, β-$2CaO \cdot SiO_2$) gives more stability in humid conditions, but owing to the soln. of gypsum the stability is poor in water. (D) fired at 750-850° is more stable toward humidity and water than is (C). R. S. L.

EYDUKS, Y

Concretions in Tūjas Middle-Devonian clays. J. Eidūks, V. Dikmane, and K. Karlsons. *Latvijas PSR Zinātņu Akad. Vestis* 1953, No. 2 (Whole No. 67), 91-7(Russian summary, 98).—The concretions in the Tūjas (Latvia) Middle-Devonian clays were principally dolomitic. They decreased the firing shrinkage and the bend strength, and increased the water absorption of the products. To obtain satisfactory products, the concretions should be avoided or removed, and the content of the dustlike particles should be below 7% when the sand content is 1% and below 12% when the sand content is below 0.4%. A. D.

(2)

EYDUKS, Y.

MT

Production of new mortar binders from waste of gypsum mines under industrial conditions. J. Eiduks, A. Vaivads, and B. Hofmanis. *Latvijas PSR Zinatņu Akad. Vestis* 1953, No. 4(Whole No. 69), 91-6(Russian summary, 96-7).—Waste from gypsum mines contained $CaSO_4.2H_2O$ 87, dolomite 13.1, and clay 19%. In gypsum stills, at 100-80°, the waste gave a product conforming to specifications for the first grade plaster quality gypsum. In rotation furnace with gases 400-650° in and 150-70° out, a product equivalent to the second grade gypsum was obtained; its properties improved with storage. In the lime oven at 1000-1100°, the product obtained was similar to anhydrite cement, with CaS 1.11, free CaO 14.9, and free MgO 7.5%. The presence of CaS caused nonuniformity of vol. change, which could be amended by storage or by addn. of 0.5-1.0% $FeSO_4$. Andrew Dravnieks

(2)

EYDUKS, Y.

4

Thermographic and röntgenographic studies of the mineralogical composition of various Latvian Quaternary clays. J. Riduks and A. Vaivads (Inst. Chem., Acad. Sci. Latv. S.S.R., Riga). *Latvijas PSR Zinātņu Akad. Vēstis* 1953, No. 9(Whole No. 74), 103-16(Russian, summary).—The main constituent of the Latvian Quaternary clays was hydromica (illite) in the Krustpils, Aknistes, and Ozolnieki clays, and another hydromica which was closer to mica than the illite, in the Kalnciems, Kalkūni, and Brocēni clays. In addn., these clays contained montmorillonite as a transformation product of illite. Accessory minerals were quartz, muscovite, dolomite, hydrogoethite, etc. No kaolinite or halloysite was detected. Andrew Dravnieks

8 (1)

MRT

EYDUKS, I.

1 Thermographic and röntgenographic studies of mineralogical composition of some Latvian Devonian, Triassic, and Jurassic clays. I. Eiduks and A. Vaivads (Inst. Chem., Acad. Sci. Latv. S.S.R., Riga). *Latvijas PSR Zinātņu Akad. Vēstis* 1953, No. 10(Whole No. 75), 125–35(Russian summary, 136).—Latvian Devonian, Triassic, and Jurassic clays consist mainly of the illite-type hydromica in various stages of degradation. In Rosica and Pulvernieki Jurassic clays the degradation reached kaolinite (20–5%). In most clays, Na and Mg montmorillonite with rather poorly defined lattice were present in varying amts. The Kengarags and Sauriesi clays belonged to the beidellite type, contg. kaolinite and halloysite (10%). Triassic clays were similar to the Devonian clays. In all clays, hydrated muscovite could be found.

Andrew Dravnieks

(1)

EYDUKS, Ya.

Thermal expansion coefficients of fired Latvian clays. J. Eiduks and A. Vaivads. *Latvijas PSR Zinatnu Akad. Vestis* 1953, No. 12 (Whole No. 77), 131-9(Russian summary, 139-40).—The linear thermal expansion coeff. (I) of Latvian clays fired at 800–1000° was 10×10^{-6} or less. Quaternary clays had higher I than the Devonian. Presence of carbonates increased I. In the quartz-bearing types, I increased proportionally with temp. to 400–450°, and increased rapidly between 450 and 600°. A. L.

EYDUKS, Ya.

7

Variation of properties of lead-free and boron-free vitreous enamels with the fritting temperature. J. Eiduks and A. Petrāns (Chem. Inst., Acad. Sci. Latvian S.S.R., Riga). *Latvijas PSR Zinātņu Akad. Vestis* 1956, No. 1 (Whole No. 78), 129-38(Russian summary, 139).- The following frits were investigated: Na_2O 0.20, K_2O 0.20, CaO 0.10, MgO 0.03, ZnO 0.30, BaO 0.12, Al_2O_3 0.10, and SiO_2 3.0 moles, and with 0, 0.40, or 0.80 mole F. The best properties were obtained by fritting at 1250-1300°. F decreased the melting temp., alky. of the suspension, and coating temp., but increased the wetting ability of the enamel. The amt. of F left after fritting at 1400° was 0.2-1.1%. The linear thermal expansion coeff. decreased with fritting temp.; this change was larger in the F-bearing enamels. The best enameling temp. decreased by 20-100° with increase in the fritting temp., for the F-bearing types, but did not change in the F-free compns. Andrew Dravnieks

ZYDUKS, I.

Some mineralogical and physicochemical properties of clays from Cēsis Mūrieja. I. Židuks and H. Matisons (Inst. Chem., Acad. Sci. Latv. S.S.R., Riga). *Latvijas PSR Zinātņu Akad. Vēstis* 1954, No. 4 (Whole No. 81), 101–11 (Russian summary, 111–12).—The Devonian clays from Cēsis Mūrieja, Latvia, are purple, green, and brown-red. The properties of the clays and their fractions are described. The substance of the finest particles was essentially the same throughout the formation, but the differences in color and other properties were traced to the variations in the contents of iron oxides, mica, montmorillonite, quartz, feldspar, and accessory trace minerals, in the fractions of the larger particle sizes. The large inclusions are primarily dolomitic and seem to have formed simultaneously with the pptn. of the clays from the geol. lakes. A. Dravnieks

EYDUKS, I.

Ceramic, physical, and chemical properties of some Cēsis Murleja clays. I. Eiduks and H. Matisons. *Latvijas PSR Zinatnu Akad. Vestis* 1954, No. 6 (Whole No. 83), 119-28(Russian summary, 129-30).—Cēsis Murleja clays were water-stable after firing at 550-600°. The difference between the max. firing temp. and clinkering temp. was 80-90° for the carbonate-free clays and less for the carbonate-bearing samples. The basic clay substance, with particle size below 0.005 mm., was sintered at 900° and showed a higher vol. increase at a lower temp., compared with the bulk clay. The solv. in boiling 2*N* HCl reached a max. at the firing temp. (750-800°). The dissolved portion contained 27-9% silica and 8[illegible]% alumina. Tech. applications of these clays are discussed. Andrew Dravnieks

1 3/4

USSR

Influence of lithium on physicochemical characteristics of low-melting (ceramic) glazes. J. Ekluks and A. Vaivads. *Latvijas PSR Zinatņu Akad. Vestis* 1954, No. 11 (Whole No. 86), 118-20(in Russian).—Low-melting (ceramic) glazes were prepd. from quartz sand and chemically pure substances. [illegible] amts. up to 7.7% Li_2O was introduced as Li_2CO_3, substituting first on molar basis for Na, [illegible], and Mg, and then, on wt. % basis, for other elements, starting with a base mixt. (in %): SiO_2 60.40, Al_2O_3 11.03, Na_2O 7.0, K_2O 7.08, CaO 2.13, MgO 1.2. The mixt. was fritted at 1300°. Substitution of Li for Na decreased the softening temp. (I) and the temp. (II) at which the liquid phase begins to form. These effects reached a max. at 0.14 mol. % Li_2O. At higher addn., I and II increased again. Substitution of Li for K, Ca, Mg, Si, and Al decreased I and II. The thermal expansion coeff. (III) decreased in substitution of Li for Na to a min. above 3.8 wt. % Li_2O. In substituting Li for K, III decreased to a min. at 1.17–2.67 Li_2O, then, at higher Li content, increased. In substituting Li for Ca, III slightly decreased; for Mg, slightly increased. pH of

1/2

9, Eiduks etc

suspension was 10–11, and increased with Li content. The ease of grinding increased with substitution of Li for K and Na, decreased with substitution for Ca and Mg. Gloss was the best in mixts. where part of K was substituted by Li; in other substitutions, the gloss changed little. Crystn. (IV) intensified when Li content exceeded 1%. The wetting ability of the molten frits, as measured by the method of contact angles, was generally poor, and did not change by substitution of Li for K, but improved when Li substituted for other components. From considerations of I, II, III, and IV, optimum for Li content was 0.8–1.0%. For articles made of clays contg. 15% carbonates, the best mixt. was (%): SiO_2 70.3, Al_2O_3 12, Na_2O 7.7, K_2O 6.0, CaO 2.2, MgO 1.2, Li_2O 0.58, with III 73×10^{-7}. For faience three following mixts. are suggested, to be fired at 1020–50°: SiO_2 70.4, 71.2, 73.3; Al_2O_3 12.1, 12.2, 12.6; Na_2O 5.2, 7.8, 8.0; K_2O, 7.8, 5.2, 5.0; CaO 2.2, 2.2, 2.2, MgO 1.2, 1.2, 1.3; Li_2O 1.16, 1.17, 2.57. Application of thermographic analysis to detn. of softening, m., and liquidus temps., and crystn. is described

Andrew Dravnieks

EYDUKS, I.

USSR

Increase of the thermal expansion coefficient of ceramic materials. A. Vaivads and I. Elduka. *Latvijas PSR Zinatnu Akad. Vestis* 1955, No. 1(Whole No. 90), 139–48 (Russian summary, 148–9).—The influence of various addns. on thermal expansion coeff. (I) of clays was studied at firing temps. 800–1000°, in an attempt to increase I of several Latvian clays from 47–83 × 10^{-7} to 70–86 × 10^{-7}, so as to match I of Pb- and B-free ceramic glazes. Addn. of 20–30% limestone (II) or dolomite (III) increased I by 37–50%. Na_2CO_3 also increased I; the suggested addn. is 2–3%. Na_2CO_3 also increased the density of the carbonate-free clays if fired at 900°, but in the carbonate-bearing clays at 1000°. I of the natural minerals such as limestone, dolomite, or magnesite was very high (23–33 × 10^{-6}) but rapidly decreased on successive firings, and stabilized at approach to the dissocn. temp. It is proposed that this effect explains local glaze failures on the once-fired articles. Viterite, limestone, or dolomite on a percentage basis, were equally efficient in increasing I. Addn. of quartz sand increased I at firing below 900°, but above 900°, max. I was obtained at 5–10% sand. Increases in I resulted also from addn. of $Ca(OH)_2$, $BaCO_3$, and apatite. The following addns. are suggested for best results in increasing I: limestone or dolomite, 10–30%; or Na_2CO_3, 1–2%; or quartz sand 5–10%; or not more than 2% $Ca(OH)_2$. A. D.

137-58-6-13020

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 263 (USSR)

AUTHORS Eyduk, Yu.Ya., Maksimova, O.S., Pauksh, P.G.

TITLE: Titanium Enamels on Cast Iron (Titanovyye emali po chugunu)

PERIODICAL: Uch. zap. Latv. un-t, 1956, Vol 9, pp 169-176

ABSTRACT: The purpose of the study was to obtain white enamel for cast iron pigmented with TiO_2 at a firing temperature $< 800^{\circ}C$. Founding of frits was done at a temperature of 1150-1250°C, grinding was done in ceramic mills until the +4900 mesh/cm^2 screen residue was 5-10%. The surface of the cast iron was cleaned with wire brushes and emery or by sandblasting (metal-shot blasting). The zone of optimal firing was determined visually after calcination of cast-iron plates with enamel applied during 15 min in a gradient kiln with a variation in temperature from 500 to 1000°. The samples were tested for the degree of whiteness, chemical stability, coefficient of heat expansion, and thermal stability. The contents of the charge and the enamel frits are quoted. High-grade coatings are obtained from R-3 frit containing (in %): SiO_2 48.5, Na_2O 10.7, B_2O_3 7.7, TiO_2 17.3, and Na_2AlF_6 11.9. During the grinding 1%

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Titanium Enamels on Cast Iron 137-58-6-13020

(of frit weight) of $NaNO_2$ and 1.5% of bentonite should be added to this frit in order to prevent formation of wavy wrinkles in the enamel. The following frit of group VII proved to be the best of the boron-free frits studied: SiO_2 61.34, Na_2O 18.89, K_2O 1.15, MgO 0.52, CaO 3.80, Al_2O_3 5.19, TiO_2 4.29, and CaF_2 4.82. During its grinding 12-15% (of weight of frit) of TiO_2 and 1.5% of bentonite are added in order to obtain a good opaqueness of the enamel. These enamels meet the technical standards relative to thermal stability and mechanical properties and greatly surpass the factory enamel in whiteness and chemical stability. Enamels of various bright colors were obtained on the base of low-melting boron-free frit.

Ts.G.

1. Cast iron--Coatings 2. Enamel coatings--Applications 3. Titanium--Applications

Card 2/2

Eyduk, Yu.Ya.

PHASE I BOOK EXPLOITATION SOV/2226

Riga. Universitate

Uchenyye zapiski, t. 14, Khimicheskiy fakul'tet, 4 (Scientific Notes, Vol 14, Chemistry Faculty, 4) Riga, 1957. 251 p. 550 copies printed.

Eds. (Title page): A.F. Iyevin'sh, Professor, Doctor of Chemistry; L.K. Lepin', Member of the Academy of Sciences Latviyskaya SSR, Professor, Doctor of Chemistry; G.Ya. Vanag, Professor, Doctor of Chemistry; Tech. Ed.: A. Peterson.

PURPOSE: This book is intended for inorganic chemists and scientists in the ceramics industries.

COVERAGE: The book contains 22 articles on organic chemical synthesis and analysis and the physicochemical properties and compositions of ceramic and refractory materials. No personalities are mentioned. Figures, tables, and references accompany the articles.

AVAILABLE: Library of Congress

Card 4/4

EYDUK, YU. YA.

LATVIA / Chemical Technology. Ceramics, glass, H
cement, materials, concrete.

Abs Jour: Ref Zhur-Khimiya, No 12, 1958, 40461.

Author : Eyduk, Yu. Ya.
Inst : Latvian University.
Title : Properties of Low-Baking Gypsum.

Orig Pub: Zinatn. Raksti. Latv. Univ., 1957, 14, 123-154.

Abstract: A relationship between gypsum properties (G) and grinding fineness, heating temperature and others, as well as the nature of the dihydrate structure and granulation of the baked G was established. The presence of medium and fine particles with a low content of particles of less than 0.005 mm of G is being specified as the optimum condition. The beginning of the hardening time is greater than 10 minutes, the temperature interval from

Card 1/4 1C

LATVIA / Chemical Technology. Ceramics, glass, cement, materials, concrete. H

Abs Jour: Ref Zhur-Khimiya, No 12, 1958, 40461.

Abstract: All modifications of the low-baked G are rapidly hydrated to SH; the further hydration process proceeds unequally, depending on the baking temperature. The strength of pure gypsum at the same $^{w}/_{g}$ is approximately the same. In the rapid dehydration of G at temperatures higher than 300°C (for instance, baking in a suspended state), a soluble A is formed on the surface of the particles, which provides a fast settling of G. Baked G contains β-SH, β-dehydrated SH, a soluble A, dihydrate, and insoluble A. The minimum amount of dihydrate and insoluble A is present in digested gypsum. G obtains the least normal density by baking it in rotating kilns, and the most, by baking it in a suspended state (Leshe's mill).

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SOV/137-58-7-15479

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 222 (USSR)

AUTHORS: Eyduk, Yu.Ya., Pauksh, P.G., Maksimova, O.S.

TITLE: Influence of Some Technological Factors on the Properties of Covering Enamels on Cast Iron (Vliyaniye nekotorykh tekhnologicheskikh faktorov na svoystva pokrovnykh emaley po chugunu)

PERIODICAL: Zinatn. raksti. Latv. Univ., Uch. zap. Latv. un-t, 1957, Vol 14, pp 221-224

ABSTRACT: On introduction of a small amount of TiO_2 (4.5%) as a separate component or as a titanium flux (Na_2O, SiO_2, TiO_2) the properties of the enamels investigated did not change from the method of introduction. Introduction of TiO_2 as a separate component simplifies the technique of preparation of frits. Upon substitution of 1% B_2O_3 in the composition of the enamel for 1% SiO_2 the wetting capacity of the enamels is increased considerably and the firing temperature is somewhat lowered. The best milling additive for the Ti enamels investigated is 1-2% of bentonite which has considerably greater binding ability than the

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Influence of Some Technological Factors (cont.)

usual plastic clays. Too fine a milling of frits contributes to the appearance of the defect known as "korezhina" ("writhing"). The best results were produced when the slip contained 5-12% of 0.05-0.01 mm diam particles. When the slip contains more of such particles the quality of the surface on firing is impaired.

R.A.

1. Enamel coatings--Binders 2. Titanium oxides--Applications
3. Cast iron--Coatings

Card 2/2

Eiduks, J.

4

Physicochemical properties of leadless and boronless pottery glazes containing oxides of barium, zinc, and strontium. A. Upīts, A. Vēlyads, and J. Eiduks. *Latvijas PSR Zinātņu Akad. Vēstis*, 1958, No. 4, 113-22.—The lower linear thermal coeff. of expansion of glazes were obtained upon the following ratio of oxides: ZnO:BaO 3:1, ZnO:SrO 1:1, and BaO:SrO:ZnO 1:1:3. The higher temps. of softening of frits were established at the following mol. ratio of oxides: ZnO:BaO 3:1 and ZnO:SrO 1:1. Chem. stability of glazes increases with the increase of ZnO content. During the fritting the formation of two products of liquation was established, one of which contained a large amt. of F compds. and is present in the melt in the form of separate layer or finely dispersed drops. The presence of ZnO aids in the stabilization of emulsion structure. The optimal luster of glazes at the low temp. of deposition was attained at the high content of ZnO in them. Glazes which are deposited at 950–1000° have a good luster and good chem. stability.

T. Chemn.

EIDUKS, Ju. Ja.

GENERAL

PERIODICALS: VESTIS, No. 5, 1958

EIDUKS, J. Mineralogical properties of nonlead and nonboron pottery glazes containing BaO, ZaO, and Sro. p. 113.

Monthly list of East European Accessions (E AI) LC, Vol. 8, No. 2, February 1959, Unclass.

EIDUKS, J., AND OTHERS.

GENERAL

PERIODICALS: VESTIS, NO. 8, 1958

EIDUKS, J., AND OTHERS. Clays of the Latvian Jurassicsystem. In Russian. p. 111.

Monthly list of East European Accessions (EEAI) LC, VOL.8, No.2
February 1959, Unclass.

SOV/136-59-5-17/21

AUTHORS: Savin, A.V., and Eyduk, Yu.A.

TITLE: Low-Temperature Sintering of Molybdenum (Nizkotemperaturnoye spekaniye molibdena)

PERIODICAL: Tsvetnyye metally, 1959, Nr 5, pp 81-84 (USSR)

ABSTRACT: The possibility of obtaining Mo by sintering at 1400 - 1700 °C was investigated. Mo powder reduced at various temperatures (Fig 1), and a hydrogen atmosphere with varying moisture contents were used. The powder was pressed into slabs 12X12X500 mm and heated. The specific weight before and after sintering was found. The compacting pressures used were 4 and 10 T/cm^2 for fine and coarse powder, giving specific weights of 5.5-6 and 9 g/cm3 respectively. The results of sintering were estimated by the compacting coefficient (K) i.e. the ratio of the volume of a pore after sintering to the original volume. Table 1 shows the least values of K or the best sintering properties are obtained using Mo powder reduced at 870 °C. With increase in reducing temperature K increases. The effect of moisture content is seen in the first hour of sintering and is less at 1600-1700 °C than at 1400-1500 °C (Figs 1 and 2).

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Low-Temperature Sintering of Molybdenum

The rate of oxidation in the first hour can be retarded by addition of 0.1% C to the Mo powder. Above 1500 °C the beneficial effect of the C falls off presumably because the oxidation ability of water vapour also decreases. Table 2 shows the gas content of Mo produced by low temperature sintering is the same as that in Mo produced by conventional methods. The finest grained structure is obtained from fine powder sintered at 1400-1500 °C and is 5-10 μ. At 1600-1700 °C it is 15-20 μ. Moisture has no effect on the grain size in 1-3 hours. Metallographic examination showed that the coarser the powder the slower the recrystallization. Table 3 shows the results of mechanical tests on 2, 0.9 and 0.5 mm Mo wire produced from the low temperature sintered slabs. Fig 3 shows the change in mechanical properties of 0.5 mm diameter wire after tempering for 3 hours at various temperatures. The wire made from

Low-Temperature Sintering of Molybdenum

coarse-grained powder has the highest mechanical properties.
There are 3 figures, 3 tables and 8 references, of which 3 are English, 1 is German and 4 are Soviet.

Card 3/3

15(2) SOV/156-59-1-46/54

AUTHORS: Zebergs, E., Eiduks, J., Reinis, V.

TITLE: Some Methods of Petrographic Research in Application to the Investigation of Glazes (Nekotoryye metody petrograficheskogo issledovaniya v primenenii k izucheniyu glazurey)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1959, Nr 1, pp 177 - 180 (USSR)

ABSTRACT: For the investigation of the interaction between glaze and body polishes were made vertically to the surface of the glaze and investigated in a polarization microscope with a lateral screening of the field of vision. By this method details and flaws that are not noticeable in ordinary light are clearly revealed (Figure). The refraction indices found by means of the immersion method (Table) also numerically proved these flaws. In flawless glazes with a constant course of the refraction index the intensity of the interaction (of the metamorphic layer) between glaze and body cannot be detected. In this case, flat slabs are sawed from the body vertically to the glaze. One side of the slab is polished and put into a 1%-solution of rhodamine B for 24 hours. After washing and

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Some Methods of Petrographic Research in Application to the Investigation of Glazes SOV/136-59-1-16/54

drying, such polished sections, under a binocular microscope, clearly show different color zones which can easily be measured micrometrically. Some glazes on faience bodies do not reveal any zones even after an application of this method. In this case, the body is covered with only a thin strip of glaze, polished after firing, and superficially stained with rhodamine B. Under the microscope the glaze intrusion into the body can be seen and measured. The microscopic photographs obtained by means of the procedures specified are given. There are 4 figures, 1 table, and 6 references, 4 of which are Soviet.

ASSOCIATION: Kafedra tekhnologii silikatov Latviyskogo gosudarstvennogo universiteta im. Petra Stuchki (Chair of the Technology of Silicates of Latvian State University imeni P tr Stuchka)

SUBMITTED: June 16, 1958

Card 2/2

EYDUK, Yu.Ya. [Eiduks, J.]; VAIVAD, A.Ya. [Vaivads, A.]; FREYDENFEL'D, E.Zh. [Freidenfeld, E.]

Physicochemical properties of α- and β- calcium sulfate semihydrates. Izv.vys.ucheb.zav.; khim.i khim.tekh. 2 no.6:920-925 '59. (MIRA 13:4)

1. Rizhskiy politekhnicheskiy institut. Kafedra neorganicheskoy khimicheskoy tekhnologii.
(Calcium sulfate)

EIDUKS, J.

15

Wetting of ceramics by glazes in the presence of active agents. J. Bīduks and O. Kukurs. *Latvijas PSR Zinātņu Akad. Vēstis* 1959, No. 8, 83-90.—A pressed cylinder of the glaze contg. the additive was placed on the ceramic surface, heated to the desired temp., and quenched. The contact angle of the drop with the surface was taken as the measure of wetting. Considerable decrease of the angle was observed with NaOH, borax, and H_2SiF_6 from the wet additives, and with NH_4VO_3, MO_3 and NH_4NO_3 from the dry additives.

A. Baidin

3

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4E26(V)

VAIVADS, A. (Riga); KUKURS, O. (Riga); EIDUKS, J. (Riga)

Thermography of easily fusible glaze. Vestis Latv ak no.9:107-118 '59. (EEAI 9:10)

1. Latvijas PSR Zinatnu akademija, Kimijas institutus.
(Glazes)

PAUKSS, P. (Riga); EIDUKS, J. (Riga); BIDERMANIS, L. (Riga)

Study of possibilities of enameling chill-cast iron. Vestis Latv ak no.11:91-101 '59. (EEAI 9:11)

1. Latvijas PSR Zinatnu akademija, Kimijas instituts.
(Enamel and enameling) (Cast iron)

PAUKSH, P.[Pauksa,P.](Riga); EYDUK, Yu.[Eiduks,J.](Riga); KAMINSKIS,Ya.
[Kaminskis,J.](Riga)

Effect of the preparation method on the properties of fretted base glaze of type borax, sand. In Russian. Vestis Latv ak no.3: 119-124 '60. (MEAI 10:7)

1. Akademiya nauk Latviyskoy SSR, Institut khimiyi.
(Borax) (Glazes) (Sand)

EYDUK,Yu.[Eiduks,J.](Riga); IEVIN'SH,A.[Ievins,A.](Riga); OZOLS,Ya.
[Ozols,J.](Riga)

Chemical and rational analyses of some typical Latvian SSR clays and their fractions. In Russian. Vestis Latv ak no.5:97-104 '60. (EEAI 10:7)

1. Akademiya nauk Latviyskoy SSR, Institut khimii.
(Latvia--Clay)

S/736/60/000/002/001/002

AUTHORS: Savin, A. V., Eyduk, Yu. A.

TITLE: The making of a Co W sintered alloy for tool manufacture.

SOURCE: Vsesoyuznyy nauchno-issledovatel'skiy institut tverdykh splavov. Sbornik trudov. no. 2. Moscow, 1960. Tverdyye splavy. pp. 15-23

TEXT: Fundamental parameters that facilitate the making of a compact single-phase alloy with a low gas content are discussed. A suitably heat-treated Co W alloy exhibits outstanding strength and wear- and corrosion-resistance characteristics which render it eminently suitable for use in the shafts of vibration-resistant tools (or instruments) in lieu of steel. W. P. Sykes' phase diagram (Am. Soc. Steel Treating, Trans., v. 21, 1933, 5 //Abstracter's note: See also ibid., p. 385//) shows that at the eutectic temperature Co dissolves about 35% W. In an alloy with 25% W, a single-phase β solid solution exists only above 1075°C, while below 1075° the alloy consists of two phases, β and ε. Precipitation of the ε phase in the supersaturated solid solution leads to dispersive hardening of the alloy at T > 500°. St. Stolarz (Metal and Production of Cobalt-Tungsten Alloy, v. IX-X, no. 1953, 298-302 //sic!//) describes a sintering method for the preparation of a 75% (by weight) Co and 25% W alloy, details of which are summarized. The author

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The making of a Co-W sintered alloy ... S/756/60/000/002/09

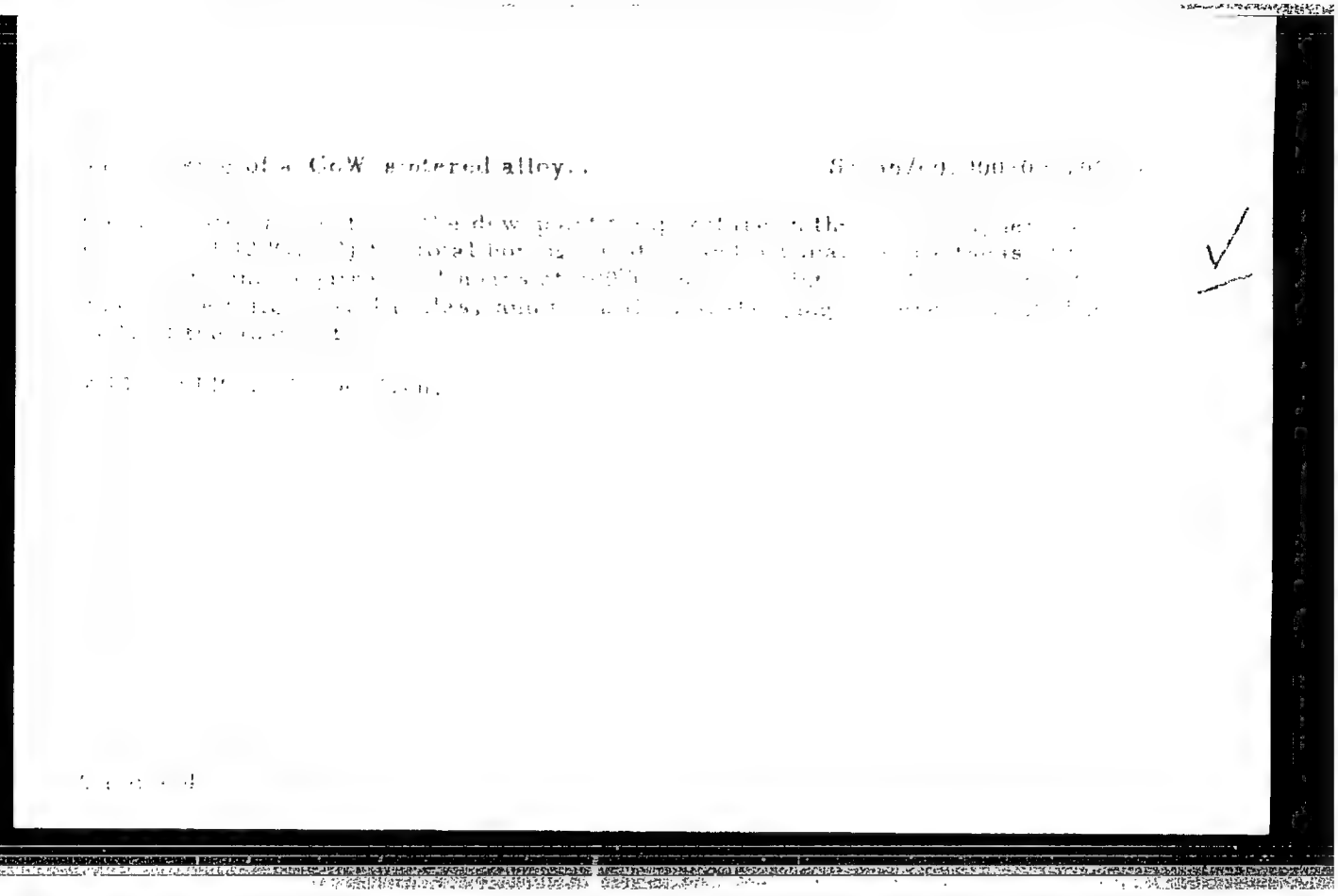
ated ammonium paratungstate (APW) produced ... the "Pobedit" factory, and ... sten anhydride (WA) of the hard-alloy plant of ... Sverdlovsk Council of the N... al Economy. The APW was calcinated to WA at 500°C in a muffle furnace ... WA was reduced to W in a H stream in a two-stage tubular furnace 51 mm ... 1500 mm long. 50-g batches of WA were treated in 30x200-mm reaction boa... in Stage I the boat advanced at 13.3 mm/min, at 650°, in an 800-1000 l/hr H stream, and in Stage II at 10.0 mm/min, at 800°, in a like H stream. The ... ing W powder was sifted through a No. 0.112-0.1 (120-150-mesh) sifter and ... stored in a tightly stoppered glass container. It contained 0.3-0.6 mg/g adsorbed methanol, 0.2-0.3% O; its dry uncompressed weight was 0.9-1.1 g/cm^3. The ... was reduced to metallic Co in the same furnace in 140-g batches carried in ... mm iron boats, advancing at 13.3 mm/min at a temperature of 580° and in ... l/hr H stream. The resulting Co powder was sifted through a No. 0.1... sifter and stored. It contained 0.2-0.5% O, 0.4-0.5 mg/g adsorbed methan... dry, uncompressed weight: 0.6-0.7 g/cm^3. A ... 75/25 (by weight) Co/W-pa... charge was mixed in a 5-liter 180-mm dia porcelain ball mill with 25-m... balls; ball weight totaled 1/2 charge weight. However ball weight would ... duced hardened shiny Co flakes. The mixture was pressed into 10x10-mm ... in a disassembleable steel die at a 3 ton/cm^2 pressure. The rods were sint... two stages in an alundum furnace ... temperature and ...

Card 2/4

The making of a CoW sintered alloy... [illegible]

time were varied; the H atmosphere [illegible] and [illegible] unspecified/ and a dew-point [illegible] of 2 [illegible] C. The [illegible] attained a compact metallic appearance [illegible] phase β solid solution structure. [illegible] negligible (spec. grav. 5.42 g/cm³) [illegible] the [illegible] 7.80, at 1100° 8.59. The effects of various sintering procedures on the [illegible] structure and density of the resulting β [illegible] are tabulated. Following [illegible] sintering at 800° the ultimately [illegible] alloy was free of inclusions [illegible] identical second sintering, specimens [illegible] initially sintered at [illegible] contained, as a rule, extraneous inclusions [illegible] the composition of [illegible] unknown. In samples sintered directly at 1300-1350° without presintering [illegible] the structure was completely homogeneous, but their porosity [illegible] presintered specimens (0.2-1 [illegible]). The time of presintering [illegible] did not affect the homogeneity [illegible] density of the [illegible] tog. The gas content of the ultimate [illegible] low [illegible] ten of the component powders [illegible] by weight), a [illegible] H atmosphere, and a long holding time during secondary sintering. T[illegible] significant deg[illegible] content [illegible] 20% or more [illegible] W powder should not exceed 0 [illegible] the Co [illegible] 5%.

Card 3/4



KYDUK,Yu.[Eiduk,J.](Riga); PAUKSH,P.[Pauks,P.](Riga)

Effect of the fineness of admixture grinding on the properties of fritted prime coat enamels. In Russian. Vestis Latv ak no.5: 105-108 '60. (KEAI 10:7)

1. Akademiya nauk Latviyskoy SSR, Institut khimii.
(Enamel and enameling)

EIDUKS, Julijs; KALNINS, Martins; MACEJEVSKA, E., red.; AIZUPIETE, M., tekhn. red.

[Minerals of the Latvian S.S.R. and their use] Latvijas PSR derigie izrakteni un to izmantosana. Riga, Latvijas Valsts izdevnieciba, 1961. 430 p. (MIRA 15:3)
(Latvia--Mines and mineral resources)

EYDUK, Yu.Ya.

Rapid methods for the quality control of glazes and glaze coatings.
Stek. i ker. 19 no.3:32-35 Mr '62. (MIRA 15:3)
(Glazes) (Ceramics--Quality control)

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S/180/61/000/004/017/020
E073/E535

18.1247 1454

AUTHORS: Baskin, M.L., Savin, A.V., Tumanov, V.I. and Eyduk, Yu.A. (Moscow)

TITLE: Mutual solubility of copper and molybdenum and certain properties of molybdenum-copper alloys

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1961, No.4, pp.111-114

TEXT: Mo-Cu alloys are extensively used for electric contacts. The authors prepared alloys containing 1.5 to 14% Cu by means of current powder metallurgy methods. Sintering of molybdenum was carried out at 1700°C and the alloys of molybdenum with low contents of copper (1.5 to 10% by weight) were sintered at the same temperature. At lower temperatures, either no sintering took place at all or the material was very porous. The alloy with 14% Cu sintered at 1600°C. The porosity of the produced alloys (determined metallographically) was about 0.6 volume % and that of pure Mo was about 1 volume %. The grain size of the molybdenum phase was approximately the same for all the alloys and also for pure molybdenum, i.e. mainly 25-30 μ. To obtain grains

Card 1/4

of this size molybdenum had to be sintered for a duration almost twice as long as that of the alloys. The properties of the starting materials, Mo and Cu, were as follows: bulk density 1.60 and 1.49 g/cm^3, respectively; adsorption of methanol vapours 0.200 and 0.026 mg/g, respectively. The average grain size of the starting powders, Mo and Cu, was 1 to 2 μ. To prevent contamination with iron, the powders were mixed in molybdenum lined mills. The specimens were sintered in molybdenum boats in resistance furnaces with an open molybdenum heater in a hydrogen atmosphere for a duration of one hour and the specimens of pure molybdenum for a duration of two hours. Heat treatment was as follows: heating in a hydrogen atmosphere to 950°C, holding at that temperature for 5 hours and quenching in oil at room temperature. Data on the Mo-Cu alloys are given in Table 2, the column headings from left to right being as follows: Cu, wt.%; specific weight, d, g/cm^3; electric resistance $\rho \times 10^2$ Ohm mm^2/m; $\lambda \times 10^6$ 1/deg; phase composition, Mo - denoting Mo-base phase, Cu - denoting copper-base phase (To же - ditto); lattice parameter kX; Mo-base phase, Cu-base phase. The tabulated electric

Card 2/4

resistance values are averages from 36 measurements, whereby the maximum error was ±2% and the deviations from the average value did not exceed 0.3%. The coefficient of linear expansion was determined by means of a dilatometer with quartz rods and indicator head in the temperature range 18 to 400°C, the error being within the limits of ±2.5%. To determine the influence of admixtures which are important in the industrial manufacture of Mo-Cu alloys, a series of melts were produced containing admixtures of C, Si and SiO_2. Table 3 gives the obtained results for Mo-Cu alloys with 3, 5 and 8% Cu, respectively and the following admixtures in wt.%: 0.05% C, 0.05% Si, 0.10% Si, and 0.50% SiO_2 ($\rho \cdot 10^2$ Ohm mm^2/m; a, kX). The influence of nickel (wt.%) on the electric resistance ($\rho \times 10^2$ Ohm mm^2/m) of Mo-Cu alloys with 5% Cu was as follows: 0 - 7.10; 0.5 - 10.31; 1.0 - 12.94; 3.0 - 14.92; 5.0 - 15.29. L. G. Grigorenko, A. A. Maksimov and A. A. Cherednov participated in the experimental work, L. Kh. Pivovarov carried out the X-ray structural analysis and M. N. Nalimova carried out the metallographic investigations. There are 3 figures, 4 tables and

Card 3/5

Mutual solubility of copper ...

12 references: 4 Soviet and 8 non-Soviet. The English-language references read as follows: Ref.3, C. L. Sargent, J.Amer.Chem. Soc., 1900, v.22, p.783; Ref.7, M. Hansen, Constitution of binary alloys, second edition, New York - Toronto - London, 1958; Ref.12, W. P. Syks, R. Kent, van Horn and C. M. Tucker, Trans. AIME, 1935, v.117, p.173.

SUBMITTED: July 15, 1960

Table 3

Admixture, wt.%	3% Cu		6% Cu		9% Cu	
	ρ×10⁹, Ω·cm·cm²/m	a, kX	ρ×10⁹, Ω·cm·cm²/m	a, kX	ρ×10⁹, Ω·cm·cm²/m	a, kX
—	7.74	3.1397	7.10	3.1397	7.25	3.1397
0.05% C	8.55	3.1393	7.75	—	7.65	3.1395
0.05% Si	—	—	—	—	8.58	—
0.10% Si	—	—	—	—	9.61	—
0.50% SiO_2	—	—	17.00	3.1375	17.40	—

Card 4/5

PAUKSH, P.[Pauksa, P.]; EYDUK, Yu.[Eiduks, J.]

Testing cast iron used in wet-process enameling. Izv.AN Latv. SSR no.4:77-84 '61. (MIRA 16:1)

1. Institut khimii AN Latviyskoy SSR.

(Enamel and enameling) (Cast iron--Testing)

PAUKSH, P.[Pauksa, P.] (Riga); EIDUK, Yu.[Eiduks, J.] (Riga)

Effect of granulometric composition in enamel suspensions on the properties of wet process ground coat enamels for cast iron. Vestis Latv ak no.3:77-84 '61. (EEAI 10:9)

1. Akademiya nauk Latviyskoy SSR, Institut khimii.

(Enamel and enameling)

PAUKSH, P.[Pauksa, P.](Riga); EYDUK, Yu.[Eiduks, J.](Riga)

Testing of cast iron used for wet process enameling. Vestis Latv ak no.4:77-84 '61. (EEAI 10:9)

1. Akademiya nauk Latviyskoy SSR, Institut khimii.

(Cast iron) (Enamel and enameling)

S/081/63/000/002/045/088
B156/B144

AUTHORS: Eyduk, Yu. Ya., Skuya, L. A.

TITLE: Determination of the volatility of fluorine in frits and glazes

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1963, 379-380, abstract 2M111 (Uch. zap. Rizhsk. politekhn. in-t, v.6, 1962, 197-202)

TEXT: The losses of fluorine introduced in the form of NaF have been determined both while fritting glaze mixtures (19.5-31.2%) and while melting them into ceramic substances (17.9-69.2%). It is shown that the losses of F are maximum when the glaze coating is thinnest. The total losses of F when fritting and melting boron-free and lead-free glazes are 25-64%. The moment at which all the F has been distilled can be established by step-by-step titration of the separate fractions in the distillate, and determination of F by the distillation method is thus made more accurate. [Abstracter's note: Complete translation.]

Card 1/1

SVEDE-SHVETS, M.I.; EYDUK, Yu.A.; YENINA, V.A.; VODOP'YANOVA, L.S.; TRUSHIN, Yu.V.; Prinimali uchastiye: DZENELADZE, Zh.O.; ZHUKOVA, Ye.A.; ISAKOVA, Z.S.; PUGACHEVA, V.P.; IGUMNOV, V.Ye.

Thermoelectric characteristics of sintered alloys based on tungsten and molybdenum. Sbor. trud. TSNNICHM no.30:7-16 '63. (MIRA 16:10)

(Tungsten-molybdenum alloys--Thermoelectric properties)

2

EYDUK, Yu. P.; SEDMAL, Yu. N.; BEREZIN, A. Ya.

"Concerning the structure of alumosilicophosphate glasses."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad, 16-21 Mar 64.

EYDUK, Yu.Ya., kand. khim. nauk; KUKUR, O.K., kand. khim. nauk

Defects occurring during the application of easily melted frit. Stek. i ker. 20 no.7:33-36 Jl '63. (MIRA 17:2)

1. Rizhskiy politekhnicheskiy institut.

L 12890-66 EWP(e)/EWT(m)/EWP(b) WH

ACC NR: AT6000485 SOURCE CODE: UR/0000/65/000/000/0156/0158

33
32
B+1

AUTHOR: Eyduk, Yu. Ya.; Sedmal, U. Ya.; Berzin', R. Ya.

ORG: None

TITLE: On the structure of aluminosilicophosphate glasses 15,44

SOURCE: Vsesoyuznoye soveshchaniye po stekloobraznomu sostoyaniyu. 4th, Leningrad, 1964. Stekloobraznoye sostoyaniye (Vitreous state); trudy soveshchaniya. Leningrad, Izd-vo Nauka, 1965, 156-158

TOPIC TAGS: lithium glass, aluminophosphate glass, silicate glass, glass property

ABSTRACT: The paper deals with glasses of the three systems Al_2O_3-SiO_2-P_2O_5, Li_2O-Al_2O_3-SiO_2-P_2O_5, and MgO-CaO-Al_2O_3-SiO_2-P_2O_5. In the first system, studies of the chemical stability, crystallizing tendency, coefficient of linear thermal expansion, softening temperature, and microhardness of the glasses indicate that they consist of the groups $[PO_4]$, $[AlPO_7]$, and $[SiO_4]$, weakly bonded to one another. As the Al_2O_3 content increases, more $[AlPO_7]$ groups are apparently formed in which P_2O_5 is bound firmly. In the second system, it is postulated that the factor determining glass formation from the standpoint of energy considerations is the similarity between the structure of the vitreous phase and that of the crys-

Card 1/2

L 12890-66

ACC NR: AT6000485

talline phases present in this region. Mineralogical and x-ray diffraction analyses of the crystalline compounds formed showed that crystallization during melting of the glasses involves formation of lithium phosphates and lithium aluminum phosphates. In the third system, the study of physicochemical properties of the glasses indicated that in their crystallization and dielectric properties they are not inferior to aluminum borosilicate glass used in the production of glass fiber, and they are therefore recommended for such use. The glass formation diagrams of the three systems are given. Orig. art. has: 3 figures.

SUB CODE: 07, 11/ SUBM DATE: 22May65

Card 2/2 HW

EYDUK, Yu.Ya. [Eiduks, J.]; BAUMAN, O.F. [Baumans, O.]; RUTIN', I.Ya.

Practices in the use of polymer gypsum. Stroi. mat. 11 no.6:16 Je '65. (MIRA 18:7)

44442
S/120/62/000/006/017/029
E192/E382

9.6000
9.3260

AUTHORS: Eydukas, D.Yu. and Barshauskas, K.I.

TITLE: Measuring pulse-generators for investigation of the transient characteristics of semiconductor diodes

PERIODICAL: Pribory i tekhnika eksperimenta, no. 6, 1962, 88 - 94

TEXT: The following method of generating current (voltage) pulses was adopted: first, a voltage pulse of given duration τ is formed and then the required current or voltage pulse is generated. This is done by using a driver pulse source to actuate a circuit for forming the rise time of the pulse; this circuit produces a pulse with a given rise time (5 - 10 ns). Simultaneously, the driver pulse is applied to a delay line and then to a circuit which forms the decay edge of the pulse; this circuit produces a signal of opposite polarity whose position corresponds to the duration of the pulse to be generated. The pulses of opposite polarities determining the leading and trailing edges of the pulse are added and a pulse of required duration is obtained. This is then applied to a forming circuit which produces an output

Card 1/2

Measuring pulse-generators ....

current (voltage) pulse of the required amplitude and duration and $\tau_1 = \tau_2 = 5 - 10$ ns. This method was used to design several pulse-current generators producing positive and negative pulses having an amplitude from 1 mA to 5 A and duration of 0.1 - 2 μs. Similar voltage-pulse generators of 1-2 ohm or 20 - 30 ohm output resistance and with amplitudes of 0.1 - 5 or 1 - 200 V were designed. A double-pulse generator producing a positive current pulse, followed by a negative voltage pulse, or vice versa, and having the same performance parameters as the above generators was also built. The transition time between the top of the current pulse and the maximum amplitude of the voltage pulse in this generator was 7 - 15 ns. The generators were tested experimentally and were used to measure the rise time, storage times and pulse-resistance of a number of semiconductor diodes. The generators could be operated at frequencies up to 200 kc/s. There are 7 figures and 3 tables.

ASSOCIATION: Kaunasskiy politekhnicheskiy institut (Kaunas Polytechnical Institute)

SUBMITTED: January 18, 1962

Card 2/2

L [illegible]-67 EWT(m) DJ/WW

ACC NR: AP6036821 SOURCE CODE: UR/0413/66/000/020/0026/0026

INVENTOR: Bydukevichyus, M. Yu. P.

ORG: None

TITLE: A core for filtration of lubricating oil and diesel fuels. Class 12, No. 186972 [announced by the Klaipeda Department of Giprorybflot (Klaypedskoye otdeleniye)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 20, 1966, 26

TOPIC TAGS: filter, filtration, paper, diesel fuel, lubricating oil

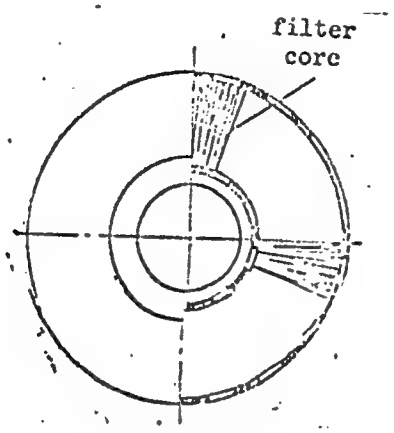
ABSTRACT: This Author's Certificate introduces a core for purification of lubricating oil and diesel fuel. This element is made from a paper type material in the form of an accordion pleated strip. The filtration capacity per unit volume of the core is increased by varying the width of the alternating pleats.

Card 1/2

UDC: 662.62:66,067,12

L 09947-67

ACC NR: AP6035821



SUB CODE:. 13, 11/ SUBM DATE: 18Oct65 / ATD PRESS: 5105

ZAYEZDNYY, A.M.; EYDUKYAVICHYUS, G.V.

Abridged representation of signals with the aid of a system of orthogonal functions. Radiotekhnika 18 no.11:5-12 N '63. (MIRA 16:12)

1. Deystvitel'nyye chleny Nauchno-tekhnicheskogo obshchestva radiotekhniki i elektrosvyazi imeni Popova.

L 46577-66

ACC NR: AR6016246 SOURCE CODE: UR/0058/65/000/011/H016/H016

AUTHORS: Eydukyavichyus, G.; Kayatskas, A.

TITLE: Some problems in the application of "optimal bases" for the construction of self organizing systems

SOURCE: Ref. zh. Fizika, Abs. 11Zh121

REF SOURCE: Tr. uchebn. in-tov svyazi. M-vo svyazi SSSR, vyp. 24, 1965, 33-38

TOPIC TAGS: optimal automatic control, self adaptive control, interference immunity

ABSTRACT: The authors consider questions involved in the analysis of noise with the aid of optimal bases, as applied to a self-organizing communication system. Results are presented of experiments on the determination of the interference immunity of signals of various forms when received by an ideal receiver and based on analysis of the noise. The results of the experiments confirm that the optimal bases can find application in self-organizing communication systems. [Translation of abstract]

SUB CODE: 17, 09/

Card 1/1 hs

MAKARYAVICHYUS, V.I. [Makarevicius, V.]; ZHYUGZHDA, I.I. [Ziugzda, J.]; AMBRAZYAVICHYUS, A.B. [Ambrazevicius, A.]; EYDUKYAVICHYUS, P.I. [Eidukevicius, P.]; ZHUKAUSKAS, A.A. [Zukauskas, A.]

Speed distribution in the isothermal boundary layer on a plate. Trudy AN Lit. SSR Ser. B no.3:91-97 '63.

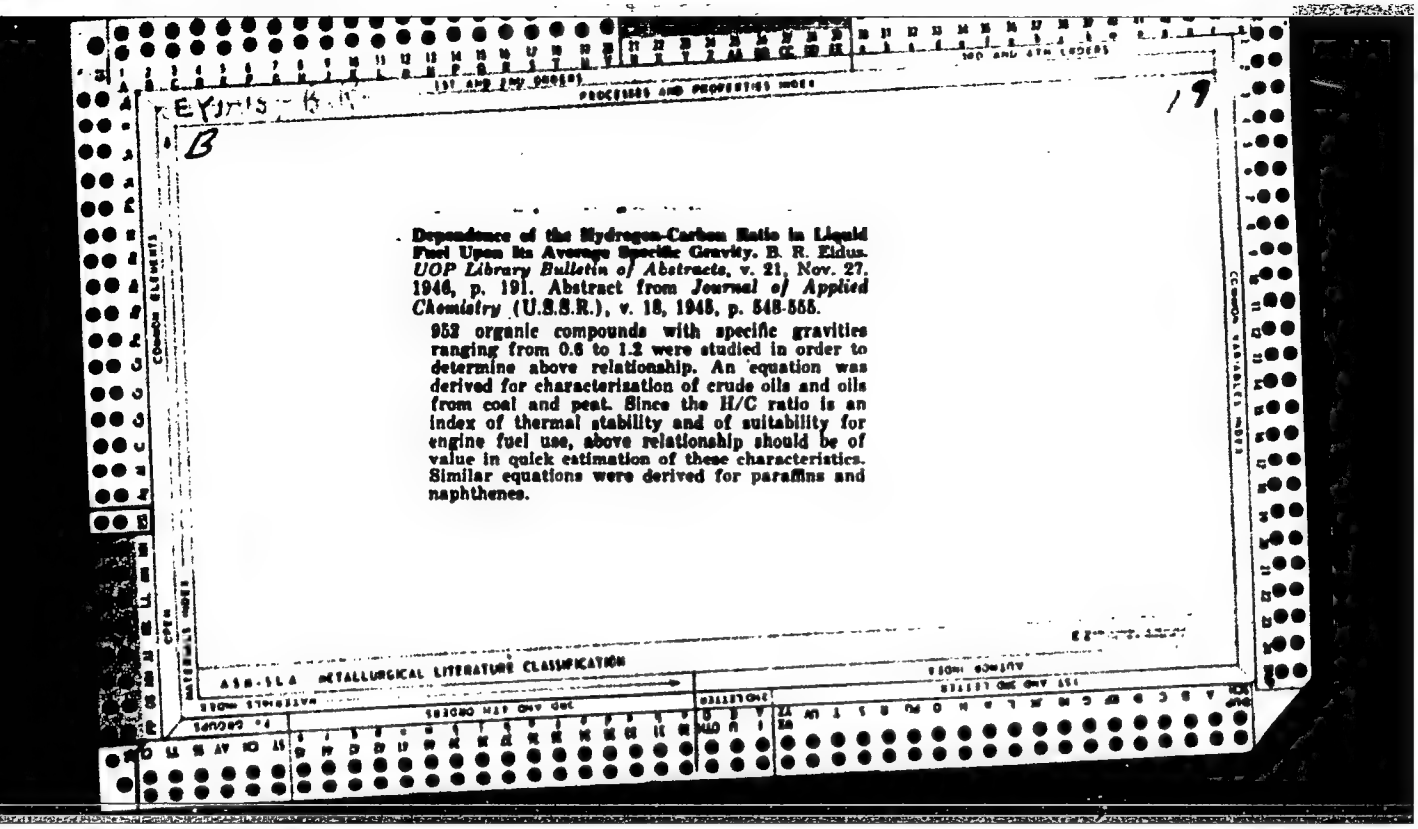
(MIRA 18:3)

1. Institut energetiki i elektrotekhniki AN Litovskoy SSR.

ZHYUGZHDA, I.I. [Ziugzda, J.]; MAKARYAVICHYUS, V.I. [Makarevicius, V.]; SHLANCHYAUSKAS, A.A. [Slanciauskas, A.]; AMBRAZYAVICHYUS, A.B. [Ambrazevicius, A.]; EYDUKYAVICHYUS, P.I. [Eidukevicius, P.]; ZHUKAUSKAS, A.A. [Zukauskas, A.]

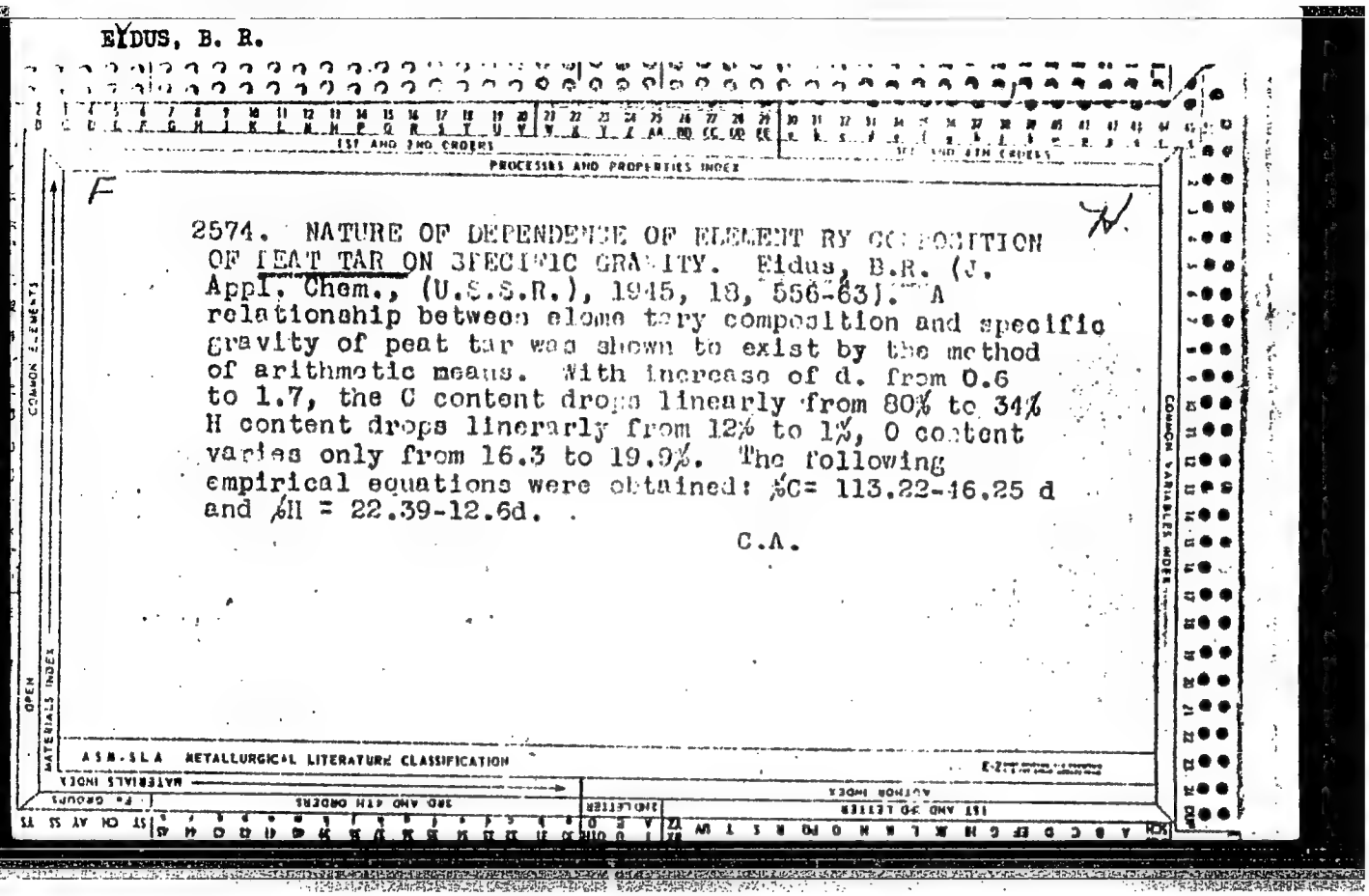
Speed and temperature distribution in the turbulent boundary layer on a plate. Trudy AN Lit. SSR Ser. B no.3:99-105 '63. (MIRA 18:3)

1. Institut energetiki i elektrotekhniki AN Litovskoy SSR.



Dependence of the Hydrogen-Carbon Ratio in Liquid Fuel Upon Its Average Specific Gravity. B. R. Eldus. *UOP Library Bulletin of Abstracts*, v. 21, Nov. 27, 1946, p. 191. Abstract from *Journal of Applied Chemistry* (U.S.S.R.), v. 18, 1945, p. 548-555.

952 organic compounds with specific gravities ranging from 0.6 to 1.2 were studied in order to determine above relationship. An equation was derived for characterization of crude oils and oils from coal and peat. Since the H/C ratio is an index of thermal stability and of suitability for engine fuel use, above relationship should be of value in quick estimation of these characteristics. Similar equations were derived for paraffins and naphthenes.



EIDUS, B. R.

PROCESSES AND PROPERTIES INDEX

F

2574. NATURE OF DEPENDENCE OF ELEMENT BY COMPOSITION OF PEAT TAR ON SPECIFIC GRAVITY. Eidus, B.R. (J. Appl. Chem., (U.S.S.R.), 1945, 18, 556-63). A relationship between elemo tary composition and specific gravity of peat tar was shown to exist by the method of arithmetic means. With increase of d. from 0.6 to 1.7, the C content drops linearly from 80% to 34% H content drops linerarly from 12% to 1%, O content varies only from 16.3 to 19.9%. The following empirical equations were obtained: %C= 113.22-46.25 d and %H = 22.39-12.6d.

C.A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

EYDUS, B. K.

Chemical Abst.
Vol. 48 No. 6
Mar. 25, 1954
Cellulose and Paper

The processing of wood tars. B. K. Eidus. *Derevo-pererabatyvayushchaya i Lesokhim. Prom.* 2, No. 11, 15-16 (1953).—The thermochem. stabilities of wood-tar (I) distillates was improved by distg. over comminuted wood (II) or charcoal (III). I from slash (IV) and pine boles (V) and stumps (VI) was pyrolyzed in a 2.5-l. retort; the pyrolysis time (in min.) (VII), temp. (VIII), yield (IX) of III after pyrolysis as % of II, yield of I as % of original I (X), and d. (XI) of III were 280, 460°, 45, 75, and 0.410 for the pyrolysis of IV (1 part) over II (1 part, 2 × 1 × 1 cm.); 270, 470°, 40, 80, and — for the pyrolysis of V (1 part) over II (1 part); 270, 470°, 35, 75, and 0.370 for the pyrolysis of VI (1 part) over II (1 part); and 240, 430°, 29, 8, and 0.250 for the pyrolysis of II alone. VII, VIII, and X for the pyrolysis of V (3.5 parts) over III (1 part) were 270, 470°, and 70; and for the pyrolysis of VI (3.5 parts) over III (1 part) were 270, 470° and 68. The various I were fractionated; the d., sapon. no. (XII) in mg./g., acid no. (XIII) in mg./g., % C$_6$H$_5$OH-insol. material, yield of fractions b. to 130°, 130-230° (*A*), 230-270° (*B*), 270-300° (*C*), and above 300° (*D*), and the sum of residue and losses were: for IV, 1.103, 190, 80, 24.5, 7.8, 9.8, 10.3, 16.2, 21.8, and 28.8; for IV after pyrolysis over II, 1.030, 100, 60, 6.4, 6.0, 13.7, 17.7, 8.0, 45.0, and 9.4; for V, 1.078, 145, 80, 23.0, 13.0, 18.5, 8.0, 4.8, 45.1, and 16.6; for V pyrolyzed over II, 1.030, 64, 38, 4.6, 10.0, 11.4, 10.0, 7.0, 48.0, and 11.0; for V pyrolyzed over III, 0.995, 25, 18, 0.3, 7.5, 8.5, 9.0, 6.0, 63.0, and 6.0; for VI, 1.095, 130, 90, 8.5, 3.0, 7.8, 6.5, 6.9, 67.0, and 8.8; for VI after distn. over II, 1.015, 85, 45, 1.6, 5.0, 12.0, 11.8, 6.5, 56.0, and 8.0; and for VI after distn. over III, 0.990, 36, 12, 0.5, 8.0, 15.0, 8.0, 7.0, 58.0, and 4.0. XII, XIII, and the content of phenols in *A-D* from V were 130, 73, and 65; 71, 43, and 60; 70, 25, and 40; and 27, 13, and 25; in *A-D* from V after pyrolysis over II were 115, 65, and 50; 67, 33, and 50; 67, 27, and 40; and 10, 7, and 20; and in *A-D* from V after pyrolysis over III were 90, 62, and 45; 91, 25, and 40; 35, 13, and 34; and 6, 4, and 7, respe... *John Lee Kenyo*

EYDUS, B.R.

Motor oil from wood tars. B. R. Eidus. [illegible] *[illegible] Landshm. Prom.* [illegible] — A study was made of the prepn. of a lubricating oil for internal-combustion engines from wood tars (I) from [illegible] pine trees. The lubricating oils tested were obtained by (1) distn. of I over wood charcoal to increase its thermal stability, (2) distn. of I over wood, and (3) the product of 2 purified with Al_2O_3. 1, the product of 2, the product of 3, the product of 3 treated with $Ba(OH)_2$, the product of 1, and a standard tractor lubricating oil (II) had the following amt. of petr. ether-insol. matter [illegible] 7.0, 2.5, [illegible], and 0.05 and the following relative rates of [illegible] 150, 75, [illegible] and loss of standard [illegible] 0.0. Material from 1 showed [illegible] to crystallize than did that from 2. Materials from 2 and 3, material from 3 treated with $Ba(OH)_2$, and II had the following viscosity (centistokes) at 50°: [illegible], 25.0, [illegible], and at 100°: —, —, 5.1, and 5.0; flash point was [illegible], 168°, and 185°; and congealing point was —15, —15, —15, and —17°. Material from 3 treated with $Ba(OH)_2$ was found satisfactory when used in a 3-horsepower, [illegible]-r.p.m. engine. John Lake Keays

Éidus, D. M. On a mixed problem of the theory of elasticity. Doklady Akad. Nauk SSSR (N.S.) 76, 181–184 (1951). (Russian)

Consider a finite domain Ω in three-dimensional (x_1, x_2, x_3)-space, with a piecewise smooth boundary Γ which consists of three parts Γ_1, Γ_2, Γ_3. A certain mixed problem of the theory of elasticity consists in the determination of the displacement vector u, which satisfies the equation

$$\mu\Delta u + (\mu+\lambda)\,\mathrm{grad}\,\mathrm{div}\,u + f = 0$$

in Ω, and also the following boundary conditions

$$u|_{\Gamma_1} = 0, \quad u_n|_{\Gamma_2} = 0 \quad t_\tau|_{\Gamma_2} = 0, \quad t|_{\Gamma_3} = 0,$$

where n and τ denote normal and tangential components, respectively, and t is the stress vector. Let D denote the class of all functions $u = (u_1, u_2, u_3)$ with continuous first partial derivatives in Ω, and such that

$$H(u) = \int_\Omega \sum_{i=1}^{3} u_i^2\, d\Omega < \infty, \quad D(u) = \int_\Omega \sum_{i,k=1}^{3} \left(\frac{\partial u_i}{\partial x_k}\right)^2 d\Omega < \infty.$$

Further, let $\dot{D}_1$ denote the subset of D consisting of all functions u satisfying $u|_{\Gamma_1} = 0$. Introduce a norm in D, by means of the definition

$$\|u\| = [H(u) + D(u)]^{\frac{1}{2}},$$

and let $\bar{D}_1$ be the closure (completion) of the space $\dot{D}_1$ with respect to this norm. According to S. G. Mihlin [Direct Methods in Mathematical Physics, Moscow-Leningrad, 1950] in order to solve the above mixed problem one need only establish that there exist positive numbers α and β such that, for any u in $\bar{D}_1$, the following two inequalities hold.

(1) $$H(u) \leq \alpha D(u),$$

(2) $$D(u) \leq \beta S(u),$$

where

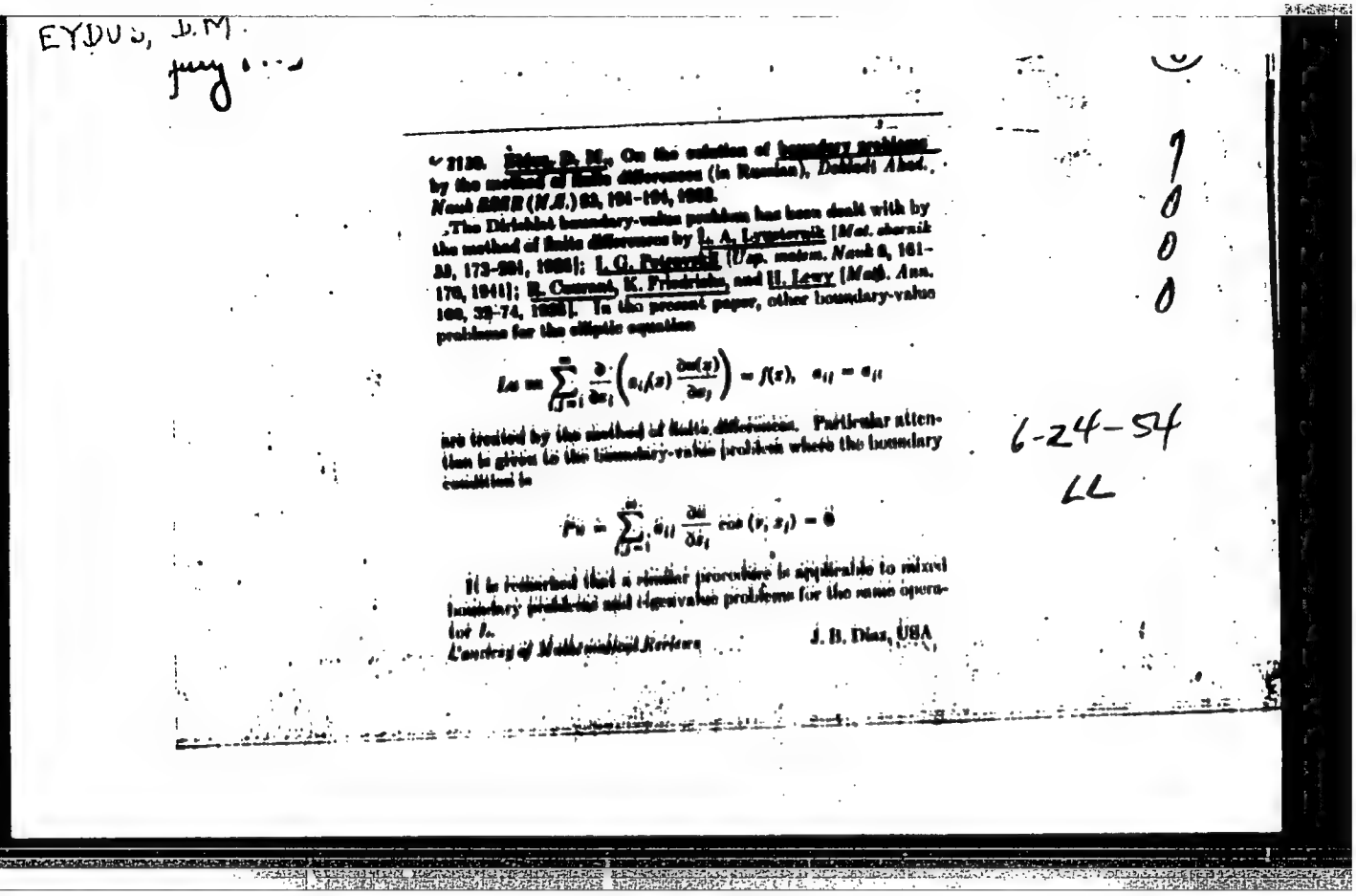
$$S(u) = \int_\Omega \sum_{i,k=1}^{3} s_{ik}^2\, d\Omega, \quad s_{ik} = \frac{1}{2}\left(\frac{\partial u_i}{\partial x_k} + \frac{\partial u_k}{\partial x_i}\right).$$

Inequality (1) was proved by S. L. Sobolev [Mat. Sbornik N.S. 2 (44), 467–500 (1937)]. Using results of K. O. Friedrichs [Ann. of Math. (2) 48, 441–471 (1947); these Rev. 9, 255], the present author proves the inequality (2).

J. B. Diaz (College Park, Md.)

Source: Mathematical Reviews, Vol 13 No.5

EYDUS, J.M.



2128. Eidus, D. M., On the solution of boundary problems by the method of finite differences (in Russian), *Doklady Akad. Nauk SSSR (N.S.)* 85, 181–184, 1952.

The Dirichlet boundary-value problem has been dealt with by the method of finite differences by L. A. Lyusternik [*Mat. sbornik* 33, 173–294, 1926]; L. G. Fitzgerald [*Usp. matem. Nauk* 6, 161–170, 1941]; R. Courant, K. Friedrichs, and H. Lewy [*Math. Ann.* 100, 32–74, 1928]. In the present paper, other boundary-value problems for the elliptic equation

$$Lu \equiv \sum_{j=1}^{n} \frac{\partial}{\partial x_j}\left(a_{ij}(x)\frac{\partial u(x)}{\partial x_j}\right) = f(x), \quad a_{ij} = a_{ji}$$

are treated by the method of finite differences. Particular attention is given to the boundary-value problem where the boundary condition is

$$Pu \equiv \sum_{j=1}^{n} a_{ij}\frac{\partial u}{\partial x_j}\cos(\nu, x_j) = 0$$

It is remarked that a similar procedure is applicable to mixed boundary problems and eigenvalue problems for the same operator L.

(Courtesy of *Mathematical Reviews*) J. B. Diaz, USA

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6-24-54 LL

EYDUS, D. M.

USSR/Mathematics - Eigenfunctions 21 Mar 52

"Continuous Dependence of Eigenfunctions on Region," D.M. Eydus

"Dok Ak Nauk SSSR" Vol 83, No 3 pp 365-367

Considers a finite region O with boundaries G in a space of variables x_m; and the problem concerning the eigenvalues of the elliptic-type operator $Lu = (d/dx_i)(a_{ij}du/dx_j)$ (ij-summed, 1 to m) for the boundary condition $u/_G = 0$. Submitted by Acad V.I. Smirnov 21 Jan 52.

227T53

EYDUS, D. M.

Applied Mechanics Reviews
Vol. 7 No. 4
Apr. 1954
Theoretical and Experimental Methods

6

Eydus, D. M., Estimate of the modulus of eigenfunctions (in Russian). [illegible]
974, June 1953

Paper deals with eigenvalues λ_n and normalized characteristic functions u_n of the Helmholtz operator $\Delta u + \lambda u = 0$ in a finite region Ω of n-dimensional space and zero values at the boundary Γ. In the case $n = 4$ [illegible] where $\lambda = (\pi/4) + 1$ and c is a constant.

Author establishes this inequality also for $\lambda = \pi/4$ and, for arbitrary part Ω_1 of Ω lying within Ω, he raises the exactness of the estimate mentioned above up to the value $\lambda = (N - 1)\lambda$. In this case, however, the number c depends upon Ω_1.

Paper is of mathematical character but the results have importance in the advanced theory of [illegible] and in other fields of mathematical physics. [illegible]

EYDUS, D. M.

FD-829

USSR/Mathematics - Elasticity Theory

Card 1/1 : Pub. 64 - 4/10

Author : Eydus, D. M. (Leningrad)

Title : The contact pro[illegible]m of elasticity theory

Periodical : Mat. sbor., 34(76), 429-440, May-Jun 1954

Abstract : The problem examined is that of finding in a bounded region in three-dimensional space a displacement vector with projections on the co-ordinate axes which satisfies a certain equation and three boundary conditions. The author proves five theorems on inequalities using in the proofs lemmas developed earlier in the article.

Institution : --

Submitted : December 18, 1952

Eydus, D.M.

USSR/Mathematics - Boundary problems

Card 1/1 Pub. 22 - 6/60

Authors : Eydus, D. M.

Title : The boundary problem of equation $\Delta u + \lambda^2 u = 0$

Periodical : Dok. AN SSSR 100/4, 631-633, Feb 1, 1955

Abstract : A solution is sought for equation: $\Delta u + \lambda^2 u = 0$. A solution is first considered for the above equation under the following boundary conditions: $u|_S = 0$. Then, the boundary conditions $u|_S = \psi$, are used assuming that $\psi(x)$ is a continuous function over surface S. The author recommends expanding the function ψ along its eigen functions θ_m: $\psi = \sum_{m=1}^{\infty} (\psi, \theta_m)\theta_m$, then a solution of the boundary problem $u(x)$, where $x \in \Omega$, can be found and expressed as follows:

$$u(x) = \sum_{m=1}^{\infty} \frac{(\psi, \theta_m)}{\mu_m} \int_S \frac{\sin \lambda r_{xy}}{r_{xy}} \theta_m(y)\, dS_y .$$

Institution : Leningrad Institute of Aircraft Instrument Construction

Presented by: Academician V. I. Smirnov, November 17, 1954

EYDUS, D. M.

1-FW

Èĭdus, D. M. On the existence of the normal derivative of the solution of the Dirichlet problem. Vestnik Leningrad Univ. 11 (1956), no. 19, 137–150. (Russian)

Let Ω be a finite [illegible] bounded by [illegible] parametrization [illegible] of functions continuous [illegible] by

$$\|\varphi\|^2 = \int_S (\varphi^2 + \operatorname{grad}_S^2 \varphi)\, dS,$$

where $\operatorname{grad}_S \varphi$ is the surface gradient of φ, the norm in $D(S)$. Let $W_2^1 D(S)$ denote the space obtained by the closure of the linear manifold $D(S)$ with respect to the norm $\|\varphi\|$. It is shown that [illegible] then the harmonic [illegible] on S has the property [illegible] exists almost everywhere [illegible]

MIT

Eydus, D.M.

USSR/ Mathematics

Card 1/1 Pub. 22 - 9/54

Authors : Eydus, D. M.

Title : Evaluations of Green function derivatives

Periodical : Dok. AN SSSR 106/2, 207-210, Jan 11, 1956

Abstract : A proof is presented that the derivatives of Green's function may be evaluated by the same principle which has been used in evaluating derivatives of potential of a simple layer of the density satisfying Lipshits' conditions. Three references: 2 USSR and 1 Swiss. (1919-1953).

Institution : Leningrad Institute of Aviation Instrument Manufacture

Presented by: Academician V. I. Smirnov, October 7, 1955

EYDUS, D.M.

SUBJECT USSR/MATHEMATICS/Differential equations CARD 1/1 PG - 314
AUTHOR EJDUS D.M.
TITLE Some inequations for eigenfunctions.
PERIODICAL Doklady Akad. Nauk 107, 796-798 (1956)
reviewed 10/1956

Let λ_n be the eigenvalue with the number n of the equation $\Delta u + \lambda u = 0$ in the m-dimensional finite region Ω with the boundary surface S for the boundary value condition $u|_S = 0$. Let u_n be the corresponding eigenfunction which is normalized by the condition $\int_\Omega u_n^2 \, d\Omega = 1$. Let D^k be the operation of the k-times differentiation with respect to the coordinates of the point x. Under the assumption that for $k = 0$ the surface S is (k+1)-times continuously differentiable, $k \geqslant 1$, the author proves the inequation

$$\left| D^k u_n(x) \right| \leq c_k \lambda_n^{\frac{m-1}{4}} (\ln \lambda_n)^{1/2},$$

which in Ω is valid for all n for which $\lambda_n > 1$. Some further similar inequations are mentioned.

AUTHOR: Eydus, D.M. (Leningrad) SOV/39-45-4-4/7

TITLE: Inequations for the Green's Function (Neravenstva dlya funktsii Grina)

PERIODICAL: Matematicheskiy sbornik, 1958, Vol 45, Nr 4, pp 455-470 (USSR)

ABSTRACT: Let Ω be a finite open domain of the three-dimensional space, let S be the boundary of Ω. The author considers the Green's function $G(x,y)$ of the Laplace operator for the Dirichlet problem in Ω. It is

$$G(x,y) = \frac{1}{4\pi r_{xy}} + g(x,y),$$

where $g(x,y)$ is the regular part of $G(x,y)$. Let $Dg(x,y)$ and $D^2g(x,y)$ respectively, denote the first and second, respectively, derivative of $g(x,y)$ with respect to one of the variables. Let

$$g_1(x,y) = \frac{1}{8\pi^2} \int_S \frac{1}{r_{xt}} \frac{\partial}{\partial n_t} \left(\frac{1}{r_{ty}} \right) dS_t ,$$

where n_t is the outer normal of S in the point t. Under certain

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Inequations for the Green's Function SOV/39-45-4-4/7

assumptions on S (it has to be a Lyapunov-surface with exponents λ) the author proves the inequations

$$|g_1(x,y)| \leq c_1 \frac{1}{r_{xy}}, \quad |g(x,y)-g_1(x,y)| \leq c_2 r_{xy}^{\lambda-1}$$

and furthermore

$$|Dg_1(x,y)| \leq c_3 r_{xy}^{-2}, \quad |D(g-g_1)| \leq c_4(\lambda') r_{xy}^{\lambda'-2}, \quad \lambda' < \lambda$$

$$|D^2 g_1(x,y)| \leq c_5 r_{xy}^{-3}, \quad |D^2(g-g_1)| \leq c_6(\varepsilon) r_{xy}^{-2-\varepsilon},$$

where in the last inequations $\varepsilon > 0$ may be arbitrary, but it has to be $\lambda = 1$ and some further difficult demands are to be satisfied by S.
From these inequations there follows the inequation

$$|Dg(x,y)| \leq c\, r_{xy}^{-2}$$

announced in an earlier paper of the author [Ref 2].
There are 3 references, 2 of which are Soviet, and 1 Polish.

SUBMITTED: March 11, 1957

1. Topology 2. Functions - Theory

Card 2/2